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City of Cambridge.

THE

MAYOR'S ADDRESS

AT THE

ORGANIZATION OF THE CITY GOVERNMENT,

AND THE

ANNUAL REPORTS

MADE TO THE

CITY COUNCIL.

CAMBRIDGE:
WELCH, BIGELOW, AND COMPANY,
University Press.
1878.

CITY OF CAMBRIDGE.

In Common Council, Jan. 16, 1878.

Ordered, That fifteen hundred copies of the Mayor's Inaugural Address, together with the Annual Report of the Committee on Finance, made to the last City Council, with the accompanying documents, and such other documents as have been ordered to be printed by the last City Council, be printed under the supervision of the City Clerk, and under the direction of the Committee on Printing, for distribution, as speedily as possible.

Sent up for concurrence.

Attest: J. W. COTTON, *Clerk.*

In Board of Aldermen, Jan. 16, 1878.

Concurred.

Attest: JUSTIN A. JACOBS, *City Clerk.*

Jan. 19, 1878.

Approved.

SAMUEL L. MONTAGUE, *Mayor.*

ADDRESS

OF

HON. SAMUEL L. MONTAGUE,

MAYOR.

Gentlemen of the City Council: —

We have to-day, by our oaths of office, assumed grave and important duties; we have been intrusted by the citizens of Cambridge, a corporation numbering about forty-eight thousand inhabitants, with a taxable valuation of over fifty-five million dollars, proud of her historic associations and of her standing among the cities of our country, with the duties of providing good government for her people, and with the care and protection, and, in a measure, the management of their property for the ensuing municipal year.

It would seem, therefore, the part of wisdom for each of us, on assuming these trusts, to fully comprehend their importance, firmly resolving that no personal aims or ambitious designs shall cause us to swerve in the least from the duties we have so solemnly sworn to perform.

Near the end, let us hope, of a financial depression, the

length and extent of which has been unparalleled in the history of our country, the citizens of Cambridge find themselves with diminished resources, and a reduced valuation, burdened with a debt whose annual exactions for interest and sinking-fund purposes bear heavily upon all. Is it surprising, then, that they should expect and exact of us, their representatives in the City Council, the same care and economy in the expenditure of the public funds that they, and we, as individuals, are compelled to exercise in private matters? On this issue we were elected, and for the faithful accomplishment of this desired result we must expect to be held responsible.

FINANCES.

The present and prospective financial condition of our city is a matter of vital importance to every tax-payer: to this I invite your careful attention, for only by thoroughly understanding and realizing our present condition can we expect united efforts for the future.

The total *gross* debt of the city, as reported by the Treasurer, November 30, 1877, as compared with the same time in 1876, is as follows: —

	1877.	1876.
City debt proper	$ 3,276,500.00	$ 3,216,000.00
Water debt	1,516,300.00	1,500,300.00
Trust funds	26,000.00	25,000.00
State and county taxes	82,731.65	84,426.47
City note payable October, 1878, borrowed in anticipation of taxes, 1878	20,000.00	
	$ 4,921,531.65	$ 4,825,726.47

Increase of *gross* debt during the municipal year 1877, $ 95,805.18

The increase of the gross debt is owing to the necessity of paying for estates surrendered to the city; this is a forced investment in real estate, and if properly managed will eventually return to the treasury the cost.

The means on hand for paying this debt of $4,921,-531.65, compared with those of 1876, were as follows: —

	1877.	1876.
Funds in charge of the Commissioners of Sinking-Funds	$657,498.06	$531,945.85
Funds in charge of the Trustees of Sinking-Fund of Water-Works	241,827.28	179,441.33
Cash in hands of Treasurer	879.16	27,157.58
	$900,204.50	$738,544.76
Increase of means during municipal year 1877		$161,659.74

COMPARISON OF NET DEBT.*

	1877.	1876.
The *gross* debt November, 1877 and 1876, was	$4,921,531.65	$4,825,726.47
Means for paying same each year	900,204.50	738,544.76
	$4,021,327.15	$4,087,181.71
Decrease in *net* debt during the municipal year 1877	$65,854.56	

This is a commencement in the right direction; the citizens of Cambridge and the administration of 1877 are to be congratulated on the result. But, gentlemen, do not be deluded; this decrease in the net debt is no relief for the tax-payers of to-day; our care should be to see that there is no increase in our *gross* debt, for it is only by reducing the *gross* debt that we can expect to see any

* My figures do not exactly agree with the report of the Finance Committee, for the reason that I have not included approved unpaid bills in my statement of debt.

improvement in our annual tax. As an illustration, suppose we should create a debt of $ 150,000 this year, and issue ten-year 5 per cent bonds for that amount, and at the same time place $ 200,000 in charge of the commissioners of the sinking-funds, we should, at the end of the year, show a reduction in our *net* debt of $ 50,000; still, next year there would have to be raised by taxation an additional sum of $ 19,500 to meet the interest and sinking-fund charges on these bonds.

The following exhibit of our debt will show the number and amount of our city bonds, the rates and amounts to be raised this year for our interest and sinking-fund account, and its effect on the question of taxation.

SINKING-FUND ACCOUNT.

Amount of Bonds.		Rate fixed by Ordinance.	Amount to be raised.
$ 576,000	Bonds issued prior to March, 1872	$ 10,000	$ 10,000
1,684,000	Bonds, 10 year	8 per cent	134,720
327,000	Bonds, 20 year	3 per cent	9,810
689,000	Bonds, 30 year	1½ per cent	10,335
$ 3,276,000	Total amount required for the sinking-funds		$ 164,865

INTEREST ACCOUNT.

Amount.		Amount.	
$ 476,000	Bonds, rate of interest 5 per cent	$ 23,800	
2,800,000	Bonds, rate of interest 6 per cent	168,000	
26,000	Trust funds, rate of interest 6 per cent	1,560	
20,000	City note, due October, 1878	about 800	194,160
$ 3,322,000			$ 359,025

Making the amount to be raised this year by taxation, to pay the interest and sinking-fund charges on our *debt*,

$ 359,025, — equal to about $ 6.52 *net* per thousand, on an estimated valuation of $ 55,000,000. If this estimate should prove correct, and the *rate* should be the same as last year, — $ 17.20 per thousand, with a discount allowed of four per cent, which would leave the *net* rate $ 16.51, — it will be seen that we shall have left to pay the current expenses of the year only ten dollars per thousand; or, in other words, if we had no debt, our *net* taxes this year would only be about ten dollars per thousand.

Taking this statement of our present financial condition as a fact, I think you will agree with me that there is only one course for us to pursue, that is, strictly to carry out the principles of the platform on which we were elected, and to take a firm stand that there shall be no increase of the general city debt during this municipal year.

Such being our determination, what are our prospects for the future?

The amount of bonds falling due in the next few years is as follows: —

In 1878,	Old loan, 5 per cent bonds		$ 7,000
" 1879,	Old loan, 5 per cent bonds		15,000
" 1881,	Ten year 6 per cent bonds		100,000
" 1882,	Ten year 6 per cent bonds	$ 15,000	99,000
	Old loan, 5 per cent bonds	84,000	
" 1883,	Ten year 6 per cent bonds		605,000
" 1884,	Ten year 6 per cent bonds		688,000
	Total		$ 1,514,000

By this it will be seen that, if the course which I have indicated be adopted and followed until 1884, we shall have reduced our debt $ 1,514,000, with a consequent reduction in our annual tax for interest and sinking-fund

purposes of $ 202,420, equal to about $ 3.68 per thousand on our estimated valuation.

To accomplish this, we have only to do as any prudent business man would; first, estimate our income, then make our expenses conform to it, rather than to our ability to sell our paper on the street.

The liabilities and available assets of the city are shown by the following exhibit: —

LIABILITIES.

	1877.	1876.
Total debt	$ 4,921,531.65	$ 4,825,726.47
Approved bills and interest due	1,722.32	4,448.08
Unadjusted claims on account of assessments made for low-land filling	39,693.50	159,564.46
Unadjusted claims for construction of sewers, and for street widening	425.00	11,167.95
Total liabilities	$ 4,963,372.47	$ 5,000,906.96

AVAILABLE ASSETS.

	1877.	1876.
Value of sinking-funds and cash on hand	$ 900,204.50	$ 738,544.76
Value of surrendered estates purchased and held for sale	164,069.52	42,711.82
Uncollected taxes	242,845.59	258,164.15
Sewer, grading, and abatement of nuisance assessments	127,751.20	202,659.47
Total available assets	$ 1,434,870.81	$ 1,242,080.20
Balance of liabilities over available assets	$ 3,528,501.66	$ 3,758,826.76

Showing a reduction of net liabilities during the past year of	$ 230,325.10
Deducting from net liabilities	$ 3,528,501.66
The net amount of outstanding water bonds	1,274,472.72
Leaves the actual amount of outstanding liabilities, above available assets, which must be paid by direct taxation in the future	$ 2,254,028.94

WATER-WORKS.

There has been expended, for the extension account of the Water-Works, for the year ending November 30, 1877, $ 15,881.98. Bonds to the amount of $ 16,000 were issued to cover this expenditure.

The receipts for the year were: —

Water-rates, bills for 1877	$ 150,251.15
Water-rates, bills for previous years	7,826.96
Supplies and other sources	8,342.95
Total receipts	$ 166,421.06

The expenditures were: —

For interest on debt, $ 1,500,000, at 6 per cent	$ 90,000.00	
For sinking-fund 3 per cent	45,000.00	
For care and repair of works	25,846.96	
For supply account	4,107.04	164,954.00
Leaving a balance of receipts over expenditures of		$ 1,467.06

From this it appears that the receipts from the works, at the present rates charged for the use of the water, are just about equal to the expenses, and that any reduction in the rates, or any material increase in the debt, would make a balance on the other side of the account, which would have to be met by taxation on real and personal property. The amount expended the past year for extension account was the smallest for many years, most of it being for renewing pipes that had become too small or unfit for use.

The Water Board report that much attention has been paid the past year to removing any sources of pollution of our water supply. At Richardson's piggery, of which so much has been said, the lower pens which drained

towards the brook have been removed, the ditch leading to the brook has been filled up, and a dike thrown up at the foot of the uplands on the edge of the meadow. This, in their judgment, will prevent any drainage finding its way into Wellington Brook from this source. The brook was carefully examined some distance into Belmont, and all objectionable house and other drainage found to exist has been provided for.

No water has been taken the past year from Spy Pond, and none from Little Pond, except what passed through the Filter Basin. The Board recommend the construction of a sewer, at an estimated expense of $ 9,345.58 (not including right of way or land damages), from a point near Cushing Street, thence along the borders of Fresh Pond to the Watertown Branch Railroad, thence along the line of the railroad to Lexington Avenue, to connect with the sewer already built, for the purpose of taking the drainage from the Cushing Street District, which now finds its way into Fresh Pond. This drainage has become very objectionable at certain seasons, and is yearly growing worse. There is no doubt that prompt measures should be taken to remedy the evil.

The Board also call the attention of the City Council to the importance of obtaining additional legislation in regard to our power to take land around the borders of Fresh Pond, to protect the purity of the water. They also allude to the need of having the entire pond included within the city limits; they think, with proper efforts, this can be accomplished. As the question of the quantity and quality of our water supply is of great im-

portance to every citizen, their suggestions and recommendations should receive prompt and careful consideration.

SCHOOLS.

The total expenditures for school purposes the past year were: —

Care and repair of school-houses	$ 22,971.75
Compensation of Secretary of School Committee	300.00
Evening schools for adults	3,877.23
Evening drawing schools	792.05
Instruction in schools	146,905.00
Text-books and stationery	4,661.80
Alterations of school-houses	2,920.83
Incidental expenses	1,050.58
Truant officers	5,041.65
High School apparatus and books of reference	43.58
Total	$ 188,564.47

This is a decrease of $ 21,974.09 from the total expense of 1876.

The number of teachers was two less than last year. The number of pupils, December 1, 1877, was 7,319, — almost precisely the same as last year. While the number of pupils in all the schools remains the same as last year, the increase in the High School has been double that of any previous year. The school now numbers 480, — a larger number than can be accommodated in the present building.

A division of the school, therefore, has been transferred to the Harvard school-house. At no distant day additional accommodations will undoubtedly have to be provided for the High School. I do not, however, feel justi-

fied in recommending anything in this direction while the present depression in business continues.

A much-needed improvement has been made in the Bridge Primary school-house by the addition of a recitation-room. The plan of heating the Willard school-house has been entirely changed, by the substitution of indirect radiation for direct, thus supplying to the rooms a continued current of pure heated air, instead of the close, confined air inseparably connected with direct radiation.

FIRE DEPARTMENT.

The Chief Engineer of this department reports the condition of the service to be excellent. He congratulates our citizens on the immunity from serious losses by fire, ascribing this to the efficiency of the force and to the increased water facilities afforded the department, and also to the successful working of the fire-alarm system.

The cost of the department for the year was $68,512.66, an increase of $3,012.66 over the appropriation made by the Finance Committee. The principal expenditures were, for compensation, $38,902.63; water for hydrants and reservoirs, $6,556; new steam fire-engine, $4,250; new hose, $2,996.

The chief suggests the propriety of adding more fire-alarm signal-boxes, and of putting a bell and striker on Engine House No. 5.

He also requests the consideration of the question of locating a steam fire-engine in the Fourth Ward, south of Main Street, where he says the need is much felt.

He thinks that the cost of the department will be less this year than last, unless some extraordinary expenditure should be called for. The losses by fire during the year are estimated at $ 70,944, and the insurance at $ 46,196.

POLICE.

The Chief of Police reports the number of the force the same as last year; but that the organization has been changed by the appointment of six sergeants, five of whom are detailed for night duty and one for day. He recommends the passage of an ordinance specifying the qualifications, so far as age and physical condition are concerned, necessary to render an applicant eligible to appointment on the force. This, no doubt, will command your attention. He also advises the appointment of the officers during good behavior instead of annually, as at present. His reasons will be found in his annual report.

The total cost of the department the past year has been $ 66,850.85. There has been collected for service of warrants, court fees, etc., $ 4,759.90, making the net cost $ 62,090.95.

SEWERS.

The total expenditure on account of Sewers the past year has been as follows: —

Binney Street Sewer	$ 7,020.14
Bridge Street Sewer	4,850.82
Twenty-three smaller sewers	13,102.21
Building catch-basins	3,552.49
Care and repair of sewers	7,900.53
Cleaning	1,095.50
Total	$ 37,521.69

The additional length of sewers constructed the past year is 7,500.53 feet, or 1.422 miles, making the total length of sewers in the city 60.776 miles. Fifty-two new catch-basins have been constructed by contract; the contract price previous to June 1, 1877, being $67,50 each, since that date $49.99.

It is not probable that there will be a necessity for so large an appropriation for sewers the present year as was called for the past.

STREETS.

The total cost for the care and repair on our streets the past year was $77,817.69; for paving, $7,223.49. Twelve streets have been accepted and laid out, namely:—

3	50 feet wide.
6	40 feet wide.
1	35 feet wide.
1	30 feet wide.
1	27 feet wide.

The permanent force of this department numbers fifty men; there are also twenty-six horses employed. The Superintendent recommends the following appropriations for the present year:—

Streets	$75,000
Paving	15,000
Paving Main Street in part	25,000

These several recommendations I leave to your careful attention and judgment, only suggesting, that while it is true economy to keep our streets and bridges in proper repair, still all new improvements that are not absolutely necessary should be deferred until we are better able to

pay the expense. These suggestions will apply with equal force to his recommendations in regard to the purchase of a gravel-bank.

The Superintendent reports the accepted streets in general good order, in which I feel sure all who have occasion to pass over them will concur.

BRIDGES.

The total cost of the care, repair, and maintenance of West Boston, Craigie's, and Prison Point Bridges the past year was $ 14,963.39; this includes the cost of rebuilding Prison Point Bridge, which amounted to $ 9,398.26.

The Commissioners report the bridges in general good order. The only appropriations required this year for these bridges will be for the ordinary care and repair and maintenance.

The Superintendent of Streets reports that repairs have been made on the Brookline Street Bridge the past year at a cost of $ 1,445, and that a portion of the bridge will require new planking the coming spring. He also says that Cambridge Great Bridge will require rebuilding to make it safe for public travel, and that the River Street Bridge will have to be thoroughly repaired, and possibly rebuilt. He thinks that it will require an appropriation of $ 8,000 for the care and repair of the bridges under his charge.

LAMPS.

The amount appropriated for lighting streets the past year was	$ 24,000.00
The total expenditure was	21,102.75
Leaving balance unexpended of	$ 2,897.25

There have been nineteen additional lamps located the past year, — three at the expense of the city, and sixteen at the expense of private parties.

The Superintendent recommends that the lamps in all our streets be kept burning all night, for the reasons, that it would be a public convenience, a protection against crime, and a means of safety to our Fire Department. He thinks that if it was thought best to make this change arrangements might be made with the Gas Company for a discount on the present price, so that the expense would not be largely increased.

He also recommends the location of two additional lamps on the Common in Ward One, and that all of the lamps on the Common be lighted with gas, — all of which should receive your early attention.

OVERSEERS OF THE POOR AND ALMSHOUSE.

According to the recommendations contained in the inaugural address of my immediate predecessor, our City Charter was amended by the Legislature of 1877 so as to provide for the election of the Overseers of the Poor by the City Council, who, under the authority so granted, proceeded to elect a new Board of Overseers. The Board organized May 7, 1877, and immediately appointed a secretary, who has charge of the central office, receiving all applications for assistance, and, under the direction of the Board, grants such temporary aid as may be required to relieve pressing necessities. A suitable person was employed to examine into the personal history of each applicant and report the result of such examination to the secretary, who keeps a record of each case. In fact it is

a regular system. So far the results have proved highly satisfactory, as it has largely reduced the annual expenditure of this department, and at the same time provided as liberally for our deserving poor as heretofore.

The total expenditure the past year under the appropriation for Almshouse was	$ 70,694.83
The total receipts from all sources were . . .	13,470.14
Balance, showing net expenses	$ 57,224.69
If from this we deduct the loss on collection of house offal	2,150.39
It will show that the net cost for the support of poor was	$ 55,074.30

The *net* cost for the same purpose in 1876 was $ 73,941.57, showing a reduction in the net expense of this department for the year 1877, as compared with 1876, of $ 18,867.27.

The system extends to the management of the Almshouse, which seems to be well conducted. From a personal examination of the Almshouse and its management, I feel justified in saying, that there is not a city or town in the Commonwealth that provides more liberally or comfortably for the care and maintenance of its poor than Cambridge.

LOW LANDS AND SURRENDERED ESTATES.

From the records of the Clerk of Committees I find that the total cost of *filling* all the low land districts has been . . .		$ 559,739.95
There has been abated	$ 87,846.16	
There has been vacated on estates surrendered	132,745.36	
There has been refunded	110.23	
The cost of filling streets, lanes, etc. was	208,826.98	429,528.73
Total amount to be collected . .		$ 130,211.22
Of this amount there has been collected .	$ 56,589.65	
Amount uncollected	$ 73,621.57	

This shows the city's share of the expense to be $429,528.73. Fortunately the work of filling low lands is completed, the assessments have all been made, and most of the estates surrendered have been deeded to the city and paid for; let us hope that Cambridge will never again have a similar experience. The following tables will show in detail the cost of filling in each district, the amounts abated, vacated, and refunded, with the number of estates surrendered and the amounts paid, also the estates surrendered but not paid for, with their appraised value.

COST OF LOW LAND FILLING.

Washington Street District	$150,194.02	
Cambridge Street District	57,121.02	
Miller's River District	94,921.33	
Cowperthwaite Street District	49,895.33	
Sparks Street District	19,938.75	
Franklin Street District	187,669.00	$559,739.95

ESTATES SURRENDERED AND PAID FOR.

Number of Estates.			
2	Washington Street District	$11,573.33	
8	Cambridge Street District	42,959.29	
2	Miller's River District	2,453.30	
4	Cowperthwaite Street District	10,136.10	
27	Franklin Street District	96,947.50	$164,069.52
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APPRAISAL OF ESTATES NOT PAID FOR.

Number of Estates.			
2	Miller's River District	$1,125.00	
2	Sparks Street District	15,500.00	
4	Franklin Street District	19,596.00	$36,221.00

Gross cost of filling	$760,030.47
Less collectible assessments	130,211.22
Net cost of filling to city	$629,819.25

Originally assessed	$350,912.97	
Total abatements	220,701.75	
Amountcollectible	$130,211.22	

Of the amounts originally assessed there were apportioned into five annual payments the following: —

Washington Street District . . .	$ 43,445.60
Cambridge Street District . .	7,499.03
Cowperthwaite Street District . .	8,697.15
Sparks Street District . . .	549.04
Franklin Street District . . .	841.95
	$ 61,032.79

Abatements have been made in several instances from the above since they were apportioned. Such abatement, are all included in the figures given in the tables on this sheet. Of the foregoing amount probably not less than $ 35,000.00 are unpaid, allowing for the payment of two years' dues and for such abatements as may have been made from the original assessments.

ASSESSMENTS AND ABATEMENTS IN ALL THE FILLED DISTRICTS.

ORIGINAL ASSESSMENTS.

Washington Street District	$ 77,468.31
Cambridge Street District	31,037.60
Miller's River District	94,298.54
Cowperthwaite Street District	16,575.74
Sparks Street District	8,441.28
Franklin Street District	123,091.50
	$ 350,912.97

ABATEMENTS.

Washington Street District	$ 2,430.94	
Cambridge Street District	8,416.77	
Miller's River District	42,809.47	
Cowperthwaite Street District	7,132.95	
Sparks Street District	1,240.50	
Franklin Street District	25,815.53	
		$ 87,846.16

VACATED ON ESTATES SURRENDERED.

Washington Street District	$ 9,995.87	
Cambridge Street District	9,821.30	
Miller's River District	15,365.80	
Cowperthwaite Street District	3,122.72	
Sparks Street District	3,330.47	
Franklin Street District	91,109.20	
Total		$ 132,745.36

AMOUNTS REFUNDED.

Washington Street District	$ 97.37		
Cambridge Street District	12.86	$ 110.23	220,701.75
Balance collectible			$ 130,211.22

By this it will be seen that the city has paid for forty-three estates $164,069.52; that the appraised value of eight estates surrendered, but not paid for, is $36,221. If to this we add the cost of filling, $132,745.36, the total cost of these fifty-one estates will be $333,035.88; this may be slightly changed on the final adjustment. The disposition and sale of this real estate would seem to require some steady, settled policy; in my judgment this can be better accomplished by having the present appraisers appointed an advisory board, to act with the Committee on Public Property, on all questions of sale. The appraisers are, probably, better informed as to its present value than any one else, and it is plain that a more uniform policy can be carried out in the manner proposed than by leaving it entirely in charge of a committee of the City Council, liable to be changed every year.

Provision will probably have to be made this year to pay for the estates appraised, but not settled. Instead of creating a debt, as has been done heretofore, I would recommend that all money received from the sale of surrendered estates, and on account of assessments for low-land filling, be set apart and used for this purpose.

In conclusion, gentlemen, I have, in a plain and business-like way, endeavored, as far as possible, to present to you the present financial condition of our city, with its future prospects and wants; also to call your attention to some of the most important departments of the government, with such suggestions as have occurred to me in the short time I have had for their examination. For

further information, I would refer you to the reports of the several heads of departments, to which I would call your special attention, as a comparison of the expenditures of the past year with those called for the present will better enable you to judge of their necessity.

I would also suggest to you the importance of a thorough knowledge of the City Ordinances, the laws and rules which are to govern your actions during your term of office, as being indispensable to an intelligent performance of your duties.

REPORT

OF THE

COMMITTEE ON FINANCE.

In accordance with the provisions of Sections 18 and 19 of Chapter I. of the Revised Ordinances, requiring the Committee on Finance to lay before the City Council annually a statement of all the receipts and expenditures for the preceding financial year, and a schedule of the property, real and personal, belonging to the city, and the amount of the City Debt, and to examine and audit the accounts of the City Treasurer, the Committee herewith submits its annual Report for the year ending November 30, 1877.

The Receipts and Expenditures, as shown by the books of the City Treasurer, are as follows: —

Receipts.

Cash on hand, Nov. 30, 1876	$ 27,157.58	
From taxes, city, state, and county	935,835.21	
From temporary loans borrowed at different times in anticipation of taxes	633,595.86	
From ten-year low-land bond sold	120,000.00	
From twenty-year Water bonds sold	16,000.00	
From Cambridge Water-Works; rates, supplies, etc.	166,421.06	
From Cambridge Almshouse	13,470.14	
From Cambridge Cemetery	12,420.07	
From liquor licenses	26,475.00	
From dog licenses	2,759.94	
From sundry sources other than above	144,816.30	
Total receipts		$ 2,098,951.16

Amount brought forward	$ 2,098,951.16

Expenditures.

Sundry temporary loans as above .	$ 633,595.86	
State, county, and bank taxes . .	90,833.97	
Bills for street widening and construction of sewers contracted in previous years	11,167.95	
For estates surrendered to the City, on account of assessments made for filling low-lands in past years . .	119,870.96	
To State, one fourth amount received for liquor licenses . . .	6,618.75	
Interest on permanent city loan .	189,868.40	
Interest on temporary loans . .	14,032.07	
Commissioners of sinking-funds of the City	155,265.00	
On account of Water-Works; care, repairs, supplies, etc. .	$ 29,954.00	
Interest on Water debt	90,000.00	
Sinking-Fund of Water-Works . . .	45,000.00	164,954.00
Extension of the Water-Works . .		15,881.98
Bills approved in previous years .		15,890.72
For care of the poor, schools, highways, Fire and Police Departments, and other current expenses . .		680,092.34
Total expenditures . . .		2,098,072.00
Cash in hands of Treasurer, Nov. 30, 1877 . .		$ 879.16

The amount of appropriations and expenditures for each department may be found near the end of this report.

The notes given for temporary loans negotiated by the Committee during the year, for current expenses in anticipation of taxes, have borne interest at an average rate of three and seven eighths per centum per annum.

The books and accounts of the City Treasurer and Collector have been audited by Mr. Walter Gates, an expert accountant, employed for that purpose by the Committee. Every item of receipts and expenditures has been carefully examined. Owing to the somewhat imperfect and incomplete system by which the accounts have been kept, considerable labor was required in determining the abatements and discounts allowed, and in proving the correctness of receipts and payments during the year. Vouchers for all payments made by the Treasurer were found, except one bill of $43.75, not receipted.

The amount paid for interest on the funded debt of the City, as appears by the Treasurer's books, is $80.05 more than the annual interest on the entire amount of such debt outstanding, as shown by the schedule at the close of this report. This may be accounted for by the payment of coupons due in previous years, but not presented for payment until this year. The coupons presented to the Committee as vouchers agree with the amount charged on the Treasurer's books as being paid; but except by counting these coupons the Committee had no means of proving the correctness of the payments. As there is no record of outstanding bonds on the Treasurer's books, no means exist whereby coupons can be identified, and no way to prevent the payment of spurious coupons, should any such be presented. An examination of the Cash Account of the Treasurer resulted in finding the amount on hand $366.29 in excess of the amount called for by his books, which discrepancy the Treasurer was unable to account for.

For a schedule of all the real estate belonging to the City, the Committee refers to the Report of the Committee on Public Property.

In order to present a schedule of the City debt, the necessary information was sought for in the books of the City Treasurer, but no account showing the amount of the debt was found therein; consequently the only method by which a schedule could be prepared, was by taking the account of the City debt as printed in the last City Document as a basis, and subtracting from it the amount paid, and adding the amount of new debt created during the year. The Committee is informed by the Treasurer that this plan has been customary in former years. Such a course is unsatisfactory,

and in the judgment of the Committee unreliable, as typographical or other errors once occurring would be perpetuated from year to year. Your Committee cannot therefore vouch for the absolute correctness of the schedule presented at the close of this report.

Analysis of City Debt.

Total amount of outstanding indebtedness, Nov. 30, 1876, as appears in the last City Document (not including unadjusted claims for surrendered estates, construction of sewers and street widenings amounting to $131,038.91 which have been paid this year),		$4,830,174.55
Deduct amount paid during the year:—		
City and county tax	$84,426.47	
City note	30,000.00	
City bonds	29,500.00	
Approved bills and interest	4,448.08	148,374.55
		$4,681,800.00
Added during the year:—		
City notes	$21,000.00	
Low-land bonds	120,000.00	
Water bonds	16,000.00	
State and county taxes	82,731.65	
Unpaid approved bills	773.32	
Interest due	949.00	241,453.97
Total outstanding indebtedness, Nov. 30, 1877		$4,923,253.97
Total amount of City and Water debt, Nov. 30, 1877		$4,923,253.97
Total amount of City and Water debt, Nov. 30, 1876		4,830,174.55
Increase during the year *		$93,079.42

* The apparent increase of the total City debt is more than accounted for by the amount, $131,038.91, paid for estates surrendered on account of the low-land filling done in past years, and for sewers constructed and streets widened heretofore, and for

Value of the Sinking-Funds.

General Sinking-Fund.

Amount of fund in the hands of the Commissioners of the Sinking-Funds of the City, Nov. 30, 1876	$519,827.18	
Interest received on Fund	29,842.42	
Amount received from the City Treasurer	155,265.00	
		$704,934.60
Paid city, maturing City debt	$59,500.00	
Paid interest and premium	2,300.30	61,800.30
		$643,134.30
Accrued interest on Fund		14,363.76
Value of Fund, Nov. 30, 1877		$657,498.06

Sinking-Fund of the Water-Works.

Amount of Fund, June 30, 1876	$177,138.83	
Received interest on Fund to Nov. 30, 1877	16,942.45	
Received from the City Treasurer	45,000.00	
	$239,081.28	
Paid interest on bonds purchased	930.66	
		$238,150.62
Accrued interest on Fund		3,676.66
Value of Fund, Nov. 30, 1877		$241,827.28

Net City and Water Debt.

Total amount of debt, Nov. 30, 1877,	$4,923,253.97	
Deduct value of Sinking-Funds and Cash in hands of Treasurer, Nov. 30, 1877	900,204.50	
Amount carried forward	$4,023,049.47	

which the City was liable at the beginning of the present year. The exhibit on pages 28 and 29 shows the gross and net amount of the liabilities and available assets of the City as compared with the same one year ago.

Amount of net City and Water debt, Nov. 30, 1877	$4,023,049.47
Amount of net City and Water debt, Nov. 30, 1876	$4,091,629.79
Decrease during the year	$68,580.32

Net Water Debt.

Total amount of Water debt, Nov. 30, 1877	$1,516,300.00
Deduct value of Sinking-Fund of the Water-Works	241,827.28
Net amount of Water debt, Nov. 30, 1877	$1,274,472.72

Net General City Debt.

Total amount of general City debt other than Water debt, Nov. 30, 1877	$3,406,953.97
Deduct value of general Sinking-Fund and cash on hand	$658,377.22
Net amount of general City debt other than Water debt, Nov. 30, 1877	$2,748,576.75

Liabilities.

	1877.	1876.
Water Loan bonds	$1,516,300.00	$1,500,300.00
Other City bonds	3,276,500.00	3,186,000.00
City notes	20,000.00	30,000.00
Trustees Daniel White charity	5,000.00	5,000.00
Trustees Dowse Institute	10,000.00	10,000.00
Trustees Sanders Temperance Fund	10,000.00	10,000.00
Trustees Dana Library	1,000.00	
Amounts carried forward	$4,838,800.00	$4,741,300.00

	1877.	1876.
Amounts brought forward	$4,838,800.00	$4,741,300.00
State tax	52,155.00	62,586.00
County tax	30,576.65	21,840.47
Approved bills and interest due	1,722.32	4,448.08
Unadjusted claims on account of assessments made for low land filling	39,693.50	159,564.46
Unadjusted claims for construction of sewers and for street widening	425.00	11,167.95
Total liabilities	$4,963,372.47	$5,000,906.96

Available Assets.*

Cash in hands of Treasurer	$879.16	$27,157.58
Value of General Sinking-Fund	657,498.06	531,945.85
Value of Sinking-Fund of Water-Works	241,827.28	179,441.33
Value of estates surrendered on account of assessments for low-land filling, purchased by the City, now on hand for sale	164,069.52	42,711.82
Uncollected taxes	242,845.59	258,164.15
Uncollected sewer assessments	10,222.03	5,037.38
Uncollected grading assessments	75,840.42	155,121.38
Uncollected assessments for abating nuisances	41,688.75	42,500.71
Total available assets	$1,434,870.81	$1,242,080.20
Balance of liabilities above available assets	$3,528,501.66	$3,758,826.76
Reduction of the net liabilities of the City during the year ending Nov. 30, 1877	$230,325.10	

* Not including public buildings, public squares, or other public property in use by the City.

Statement showing amount of Liabilities as affecting General Taxation.

Balance of liabilities over assets including Water loan . .	$ 3,528,501.66	
As the income received from the Water-Works is sufficient to pay all current expenses of the works, as well as the interest on the Water bonds, and a sufficient sum into the Sinking-Fund to extinguish the debt as it matures, this portion of the City debt does not affect the rate of general taxation, and therefore		
Deducting the net amount of the Water Loan bonds . . .	1,274,472.72	
Leaves the net amount of the liabilities of the City, to be paid by direct taxation in the future .	$ 2,254,028.94	

Uncollected Taxes, 1877.

City tax		$ 900,240.75
State tax		52,155.00
County tax		30,576.65
Bank tax		6,404.42
Total amount assessed		$ 989,376.82
Of which there has been collected	$ 782,326.01	
Abated	21,370.99	
Discounted	31,788.01	
		835,485.01
Balance uncollected		$ 153,891.81

Uncollected Taxes, 1876.

Amount assessed . . .	$ 1,033,117.60	
Error in warrant	469.20	
		$ 1,033,586.80
Collected in 1876	$ 814,175.29	
Collected in 1877	87,466.38	
Abated	23,697.56	
Discounts	32,814.42	
		958,153.65
Balance uncollected		$ 75,433.15

Uncollected Taxes, 1875.

Amount assessed		$1,163,011.03
Collected in 1875	$920,897.02	
Collected in 1876	91,718.80	
Collected in 1877	62,984.71	
Abated	36,700.07	
Discounted	37,189.80	
		$1,149,490.40
Balance uncollected		$13,520.63

The following tables, compiled from the Assessor's books, show the variation in the number of polls, value of personal and real estate, and number of dwellings in the City for the years 1876 and 1877, as found on the first day of May in each year: —

Polls and Valuation of Estates in 1877.

Ward.	Polls.	Personal.	Real Estate.	Total.	Dwellings.
1	1,896	$4,558,600	$11,545,900	$16,104,500	1,463
2	3,219	4,050,350	11,288,200	15,338,550	2,245
3	2,468	1,672,300	6,589,800	8,262,100	1,363
4	2,815	1,652,300	7,920,400	9,572,700	1,967
5	1,195	944,500	5,532,700	6,477,200	915
Total	11,593	$12,878,050	$42,877,000	$55,755,050	7,953

Polls and Valuation of Estates in 1876.

Ward.	Polls.	Personal.	Real Estate.	Total.	Dwellings.
1	1,909	$5,362,808	$12,816,800	$18,179,608	1,455
2	3,219	4,537,575	12,611,000	17,148,575	2,207
3	2,570	1,995,870	7,545,800	9,541,670	1,361
4	2,881	1,663,000	8,687,900	10,350,900	1,956
5	1,220	1,070,300	6,345,400	7,415,700	903
Total	11,799	$14,629,553	$48,006,900	$62,636,453	7,882

It will be seen by the foregoing that the decrease in valuation in 1877 is,

Personal estate	$1,751,503
Real estate	5,129,900
Total,	$6,881,403
Decrease in number of polls	206
Increase in number of dwellings	71

The rate of taxation was $17.20 per $1,000, with the established discount of four per cent if paid before October 10, making the net rate on all taxes so paid 16.51\frac{2}{10}$ per $1,000.

SCHEDULE,

GIVING IN DETAIL THE AMOUNT OF APPROPRIATION AND EXPENDITURE IN EACH DEPARTMENT, FOR THE YEAR ENDING NOVEMBER 30, 1878.

For Alterations of School-houses.

Bridge Primary			
Plans		$5.00	
Contractor		150.00	
Willard Primary			
Steam-heating apparatus		2,765.83	
			$2,920.83
Appropriation		$5,500.00	
Amount of expenses	$2,920.83		
Transferred	1,500.00		
		4,420.83	
Balance unexpended		$1,079.17	

For Almshouse.

Books and stationery	$193.17
Bread	2,514.13
Blankets and robe	180.50
Amount carried forward	$2,887.80

Amount brought forward	$ 2,887.80
Cow	60.00
Drain-pipe, hardware, and tools	492.05
Dry goods and clothing	3,082.47
Expressage and carting	185.80
Examining accounts of former Warden	50.00
Fuel at the house	2,225.60
Fish	574.80
Flour	3,456.62
Furniture and repairs	129.49
Gas	525.48
Grain, meal, and straw	1,683.60
Groceries	4,013.78
Harnesses and repairs	160.41
Horses	835.00
Horse-hire	125.94
Horse-shoeing and iron-work	415.08
Household utensils	222.87
Incidental expenses of Warden	171.62
Incidental expenses of Secretary	23.98
Labor	118.56
Ledge:—	
Labor	426.37
Powder and fuse	65.10
Tools and steel	151.19
Manure	291.50
Medicine	265.94
Poor, aid rendered to	5,262.35
Boots and clothing	712.82
Burial expenses	882.00
Fuel	6,704.07
Goods delivered to	6,917.73
Medicine and medical attendance	338.93
Nursing	143.43
Rent of rooms	1,011.00
Artificial leg	75.00
Printing and advertising	223.25
Amount carried forward	$ 44,911.63

Amount brought forward	$44,911.63	
Provisions at the house	5,230.68	
Repairs and materials	627.78	
Repairs of wagons	314.18	
Room for Overseers: —		
Fitting	85.25	
Furniture	68.95	
Lettering signs	2.50	
Salaries: —		
Warden	867.00	
Assistant Warden	378.00	
Assistant Matron	275.00	
Physician	400.00	
Secretary	819.31	
Secretary's Assistant	51.52	
Chaplain	20.00	
Visitor	834.50	
Organist	21.00	
Warden's Clerk	56.50	
Seeds	93.49	
Settlements, examination of	70.00	
Shoe-findings	47.51	
Stamps and postage	38.95	
State Institutions	6,644.45	
Sunday-school expenses	120.00	
Supplies for the house	623.21	
Snuff and tobacco	230.63	
Travelling expenses and car-tickets	156.93	
Veterinary services	49.00	
Wages	7,130.00	
Water-rates	526.86	
		$70,694.83
Appropriation	$75,000.00	
Amount of expenses	70,694.83	
Balance unexpended	$4,305.17	

For Cambridge Free Dispensary.

Amount paid Trustees		$1,000.00
Appropriation	$1,000.00	
Amount of expenses	1,000.00	

For Care and Repairs of Bridges.

Advertising	$2.00	
Bolts, spikes, and nails	111.58	
Damage to schooner	90.00	
Fuel	3.00	
Hoisting draws	150.55	
Labor	2,262.68	
Lumber	1,346.39	
Oil, etc.	25.82	
Pier at Brookline Bridge	1,245.00	
Painting	31.45	
Piles and girders	589.50	
Rebuilding Western Avenue Bridge	1,275.33	
Repairs	28.26	
Sea-wall at Prison Point Bridge	692.71	
Teaming	39.75	
		$7.894.02
Appropriation	$8,000.00	
Amount of expenses	7,894.02	
Balance unexpended	$105.98	

For Care and Maintenance of West Boston, Craigie's, and Prison Point Bridges.

Advertising	$10.25	
Boxing pipes	26.90	
Buoy stone and setting	47.50	
Engineering	181.50	
Fuel	179.76	
Gas	925.90	
Amount carried forward	$1,371.81	

Amount brought forward	$1,371.81	
Inspector	270.00	
Iron-work	177.18	
Labor	2,233.97	
Lumber	269.79	
Lanterns and repairs	78.31	
Oil, etc.	47.79	
Paid for displacement of water	15.75	
Paving	155.75	
Removing obstructions in channel	32.50	
Rebuilding draw, Prison Point	8,931.01	
Repairs	54.67	
Repairs of bridges	405.60	
Repairs of house	40.57	
Salary of Commissioner	500.00	
Tools, hardware, etc.	91.69	
Watering bridges	275.00	
Water-rates	12.00	
		$14,963.39
Appropriation	$16,000.00	
Amount of expenses	14.963.39	
Balance unexpended	$1,036.61	

For Care and Repairs of School-houses.

Advertising	$18.50
Blackboards	32.30
Disinfectant	22.16
Expressage	4.25
Extra labor	61.25
Fuel	5,599.04
Furnaces and repairs	2,031.61
Furniture and repairs	435.46
Gas	222.43
Grading	8.25
Hardware, keys, and tools	146.77
Amount carried forward	$8,582.02

Amount brought forward		$8,582.02	
Janitors		9,268,16	
Lightning-rods		52.50	
Mats, dusters, etc.		555.09	
Repairs		3,714.23	
Repairing clocks		33.75	
Ventilators		244.00	
Water-rates		522.00	
			$22,971.75
Appropriation		$31,000.00	
Amount of expenses	$22,971.75		
Transferred	3,000.00	25,911.75	
Balance unexpended		$5,028.25	

For Care and Repairs of Surrendered Estates.

Care of estates and collecting rents		$554.99	
Expense of sale		15.00	
Incidental expenses of agent		11.78	
Printing		4.00	
Repairs		1,613.62	
Removing night-soil		30.00	
Tax paid		12.75	
Water-rates		876.92	
			$3,119.06
Appropriation		$5,000.00	
Amount of expenses		3,119.06	
Balance unexpended		$1,880.94	

For Care and Repairs of Water-Works.

Analysis of water		$108.00	
Auditing accounts		159.50	
Carriage-hire, etc., funeral of Superintendent		43.00	
Car-tickets		92.00	
Amount carried forward		$402.50	

Amount brought forward		$402.50
Castings		589.07
Collecting and distributing bills		142.50
Dies for stamps		5.50
Directory		5.00
Expressage		7.08
Fuel		3,330.95
Harnesses and repairs		76.80
Hay, grain, and straw		634.65
Horse		145.00
Horse-blankets		11.00
Horse-shoeing		49.38
Lumber		322.72
Oil, brushes, etc.		274.86
Pipe, cocks, etc.		310.21
Packing		62.68
Printing and advertising		78.15
Reading-gauge		96.00
Record books and stationery		61.88
Rent of office, two years		800.00
Repairs		204.84
Repairs of wagons		102.30
Repairs and alterations of cottage		568.69
Salaries: —		
Registrar	2,000.00	
Superintendent	1,993.75	
Clerk of Water Board	200.00	
Services in office		1,976.67
Signs		13.16
Stamps		75.50
Sundry workmen		7,102.01
Sundry expenses		17.96
Telephone		329.92
Testing and locating gates		46.00
Tools, lanterns, etc.		308.78
Truckage		181.93
Ventilators		85.00
Water-rates refunded		3,234.52
		$25,846.96

Appropriation	$25,000.00	
Additional appropriation	850.00	
		$25,850.00
Amount of expenses		25,846.96
Balance unexpended		$3.04

For Cemeteries.

Bell		$27.09
Bier		14.25
Bricks		18.00
Canvas coverings		22.50
Care of old ground		12.00
Car-tickets		20.00
Clothing		24.15
Directory		4.55
Drain-pipe, etc.		13.52
Expressage		1.75
Fuel		52.54
Grave covers and straps		29.56
Hardware, tools, etc.		51.33
Hose		67.60
Introducing water		863.92
Labor		5,921.24
Lumber and cement		40.42
Plants		236.50
Printing		23.25
Repairs		26.60
Repairs of office and fence		259.44
Resetting curbs		150.00
Sign-posts		220.50
Sods, manure, and loam		666.60
Stationery and stamps		10.80
Stone posts		220.78
Stone		56.50
Superintendent's salary		1,500.00
Tablets for graves of soldiers		78.00
Tools sharpened		7.39
		$10,640.78

Appropriation	$12,000.00
Amount of expenses	10,640.78
Balance unexpended	$1,359.22

For City Engineering.

Books, stationery, and stamps	$127.17	
Car-tickets	84.56	
Drawing materials	29.13	
Expressage	1.95	
Horse hire	52.00	
Instruments and repairs	84.30	
Maps	53.80	
Portfolios	27.00	
Printing	7.00	
Repairs	15.73	
Rubber cloth	13.13	
Salary of engineer	2,875.00	
Services in office	3,306.11	
Stone bounds and setting	28.25	
Tools, spikes, etc.	19.74	
		$6,724.87
Appropriation	$7,800.00	
Amount of expenses	6,724.87	
Balance unexpended	$1,075.13	

For Compensation of Secretary of School Committee.

Secretary's salary		$300.00
Appropriation	$300.00	
Amount of Expenses	300.00	

For Dana Library.

Assistants in Library	$293.90	
Basket, dusters, etc.	14.52	
Binding books	466.64	
Books	815.17	
Amount carried forward	$1,590.23	

Amount brought forward	$1,590.23	
Fuel	36.36	
Furniture, shades, and repairs	73.63	
Gas	292.03	
Gas-fixtures and repairs	68.68	
Incidental expenses	15.83	
Insurance	60.00	
Janitor	128.00	
Magazines and papers	144.78	
Matting	135.78	
Printing and advertising	263.55	
Rent of rooms	900.00	
Repairs and materials	760.19	
Salaries: —		
Librarian	550.00	
Assistant Librarians	451.64	
Superintendent of Reading-Room	275.00	
Stationery	42.13	
Steps	75.00	
Taxes	155.90	
Ventilators	15.00	
Water-rates	9.00	
		$6.042.73
Appropriation	$6,500.00	
Amount of expenses	6,042.73	
Balance unexpended	$ 457.27	

For Evening Drawing-Schools.

Gas	$ 42.05	
Instruction	501.00	
Janitors	210.00	
Labor	7.25	
Plates	25.00	
Printing and advertising	6.75	
		$ 792.05
Appropriation	$1,200.00	
Amount of expenses	792.05	
Balance unexpended	$ 407.95	

For Evening Schools for Adults.

Advertising and printing	$13.50	
Books, ink, and stationery	45.51	
Gas	124.41	
Hooks, screws, etc.	4.40	
Instruction	3,481.50	
Janitors	187.00	
Repairs	15.48	
Truckage	5.43	
		$3,877.23
Appropriation	$4,000.00	
Amount of expenses	3,877.23	
Balance unexpended	$122.77	

For Extension of Water-Works.

Advertising	$13.50	
Brick	12.75	
Castings and labor	60.13	
Cement	6.00	
Collecting-basin at Little Pond	2,195.00	
Engineering	20.00	
Engineer's house, alterations of	816.13	
Fishway	406.72	
Gates and valves	617.65	
Hydrants	1,066.50	
Interest on damages	6.15	
Lead	808.37	
Meters	346.75	
Packing	18.72	
Pipes and castings	4,824.28	
Repairs of coal-shed	190.66	
Repairs of gate-chamber	151.00	
Rent of wharf	250.00	
Railroad-track at coal-shed	678.04	
Sundry workmen	2,812.40	
Tools and sharpening	30.52	
Truckage	420.46	
Valve weights	130.25	
		$15,881.98

Appropriation	$30,000.00
Amount of expenses	15,881.98
Balance unexpended	$14,118.02

For Fire Department.

Alterations of Hook and Ladder House, Ward Two	$1,639.50
Expressage	71.75
Fines of members	288.00
Fuel	1,114.18
Furniture	187.25
Gas	1,912.40
Hardware, tools, and mats	294.29
Hay, grain, and straw	2,942.23
Harnesses and repairs	272.42
Hose and repairs	3,542.50
Hose dressing	67.60
Horses	600.00
Horse-hire	1,717.64
Horse-shoeing	520.94
Incidental expenses	25.40
Labor	338.75
Ladders and poles	55.35
Medicine	29.50
Oil, matches, etc.	228.34
Printing and advertising	79.00
Refreshments	70.00
Rent of room	80.00
Reservoir tops	19.81
Repairs of apparatus	2,226.34
Repairs of houses	1,146.45
Repairs of hats	57.50
Repairs	51.50
Ringing bells	26.50
Rope	17.69
Runners for wagon	30.00
Amount carried forward	$19,652.83

Amount brought forward		$19,652.83
Salaries:		
Chief Engineer	1,200.00	
Assistant Engineers	1,628.94	
Clerk of Board	47.07	
Screens for doors	25.00	
Services of members	36,026.62	
Soap	91.48	
Substitutes	490.50	
Supplies	91.67	
Telegraphic Fire-Alarm: —		
Car-tickets	26.25	
Gong and strikers	20.00	
Labor	221.37	
Repairs	21.82	
Signal-boxes	500.00	
Tools	5.13	
Washing room	22.00	
Wire, battery, hooks, etc.	142.41	
Zinc and vitriol	805.43	
Travelling expenses	3.50	
Veterinary services	323.00	
Water for hydrants and reservoirs	6,556.00	
Water-rates	165.00	
Washing	431.81	
Whips	14.83	
		$68,512.66
Appropriation	$65,500.00	
Additional appropriation	3,025.00	
	$68,525.00	
Amount of expenses	68,512.66	
Balance unexpended	$12.34	

For High-School Apparatus and Books of Reference.

Books for library	$7.50	
Charts, etc.	7.30	
Chemicals	26.13	
Corks	.65	
Repairing retort	2.00	
		$43.58

Appropriation	$100.00
Amount of expenses	43.58
Balance unexpended	$56.42

For Hopkins Fund.

Appropriation	$900.00

[Transferred to "Instruction in Public Schools," towards salary of Classical Teacher in High School.]

For Incidental Expenses.

Abstract of conveyances	$200.66
Advertising and printing	890.75
Analysis of water	100.00
Assistant Assessors' services	647.50
Auditing accounts	988.32
Bathing yards	42.42
Burial expenses	16.00
Care and repairs of clocks	239.66
Car-tickets	778.00
Carriage-hire	145.00
Census of births	95.00
Check-book, hand-stamp, etc.	26.40
City Hall: —	
Assistant Messenger	1,095.00
Cleaning and labor	681.73
Fuel	399.68
Furniture repaired and carpets cleansed	222.43
Gas	452.40
Gas regulator	150.00
Mats, shades, dusters, etc.	93.54
Repairs	408.02
Screens and ventilators	15.00
Supplies	56.07
Water-rates	84.00
Clerical assistance to City Clerk	1,500.00
Clerical assistance to Treasurer	1,000.00
Amount carried forward	$10,327,58

Amount brought forward	$10,327.58
Decoration Day	700.00
Decorating City Hall, President's visit	50.00
Diaries and directories	315.00
Erecting band-stand	4.85
Expressage	21.85
Hay-scales, repairs of	14.50
Health Department	187.42
History of Cambridge	2,000.00
Inauguration Day, expenses of	40.00
Legal services and expenses	3,384.51
Medical attendance	16.00
Music at High School	31.00
Newspapers	66.25
Ordinances, compiling and printing	200.00
Page of Common Council	50.00
Paving Eliot and Inman Squares	318.26
Postage and box-rent	8.00
Posting bills	57.93
Recording deeds	89.70
Recording births, deaths, and marriages	796.85
Reporting deaths	190.00
Ringing bells	219.50
Sealer's expenses	56.58
Settlement of claims	14,415.16
Tax bill, Belmont	106.88
Tax bill, Somerville	946.63
Tax bills, making and distributing	255.00
Ward-rooms, care and expenses of	399.50
Ward officers, services of	250.00
Weighing fuel	93.00
Ward One Building: —	
Charcoal	18.00
Cleaning	6.00
Gas	536.21
Hardware, tools, etc.	34.63
Janitor	1,276.29
Lantern	26.56
Amount carried forward	$37,509.64

Amount brought forward		$37,509.64	
Repairs		264.89	
Repairs of furniture		33.42	
Repairs of tower clock		100.59	
Water-rates		356.53	
Ward Four Building: —			
Charcoal		12.00	
Gas		178.64	
Janitor		1,276.20	
Paving sidewalk		360.08	
Repairs		120.88	
Tools, dusters, etc.		104.72	
Water-rates		90.91	
			$40,408.50
Appropriation	$40,000.00		
Additional appropriation	830.00		
		$40,830.00	
Amount of expenses		40,408.50	
Balance unexpended		$421.50	

For Incidental Expenses of Public Schools.

Binding books	$2.50	
Car-tickets	20.00	
Collecting statistics	6.00	
Compass, erasers, etc.	23.50	
Diplomas	136.25	
Expressage	6.15	
Librarian at High School	50.00	
Magazine for City School	1.75	
Moving furniture	16.75	
Page of School Committee	25.00	
Printing and advertising	596.13	
Records of High School	100.00	
Repairing clock	11.00	
Ringing bell	10.00	
Tabulating census returns	20.00	
Travelling expenses of Superintendent	5.30	
Tuning pianos	16.25	
Use of carpet	4.00	
		$1,050.58

Appropriation	$1,200.00
Amount of expenses	1,050.58
Balance unexpended	$149.42

For Instruction in Public Schools.

Salary of Superintendent		$2,840.00	
Salaries of teachers		144,065.00	
			$146,905.00
Appropriation	$149,700.00		
Additional appropriation	900.00		
		$150,600.00	
Amount of expenses		146,905.00	
Balance unexpended		$3,695.00	

For Interest and Bank Discounts.

Interest on Funded Debt		$279,742,55	
Sundry banks, etc., on temporary loans		14,032.07	
Interest on Cemetery Fund		125.85	
			$293,900.47
Appropriation		$300,000.00	
Amount of expenses		293,900.47	
Balance unexpended		$6,099.53	

For Lighting Streets.

Alcohol	$88.74
Care of lamps and lighting	5,753.00
Cocks, burners, etc.	106.50
Directory	2.50
Expressage	8.90
Gas	13,515.50
Ladders	37.25
Amount carried forward	$19,512.39

Amount brought forward	$19,512.39	
Lanterns and lamps	21.00	
Oil, matches, and glass	61.36	
Posts, piping, and repairs	529.12	
Printing	6.75	
Repairs of lanterns	369.19	
Repairs of desk	3.50	
Street signs	2.75	
Superintendent of Lamps, salary of	400.00	
Tools	12.41	
		$21,218.47
Appropriation	$24.000.00	
Amount of expenses	21,218.47	
Balance unexpended	$2,781.53	

For Paving.

Gravel and sand	$1,115.15	
Labor	1,038.50	
Paving and materials	4,958.59	
Stone	111.25	
		$7,223.49
Appropriation	$17,000.00	
Amount of expenses	$7,223.49	
Transferred	8,271.68	
	15,495.17	
Balance unexpended	$1,504.83	

For Police and Watch.

Badges and billies	$44.00
Boarding horses	515.00
Buttons	35.00
Care of police boat	5.00
Cleaning stations	59.37
Copies of papers	5.00
Diaries and directories	39.50
Amount carried forward	$702.87

Amount brought forward	$ 702.87	
Expressage	16.85	
Fuel	1,087.55	
Furniture	85.00	
Gas	952.94	
Hardware, paints, etc.	26.64	
Horse-hire	117.50	
Horse-shoeing	40.50	
Ice	51.07	
Labor	135.75	
Medical attendance	94.00	
Printing	28.25	
Repairs at stations	260.57	
Repairs of harnesses	44.27	
Repairs of wagons	98.13	
Repairs of telegraph	51.63	
Repairs	5.75	
Salary of Chief of Police	1,850.00	
Services of policemen	60,685.03	
Stamps and stationery	30.88	
Supplies, food, etc., at stations	193.75	
Telegrams	4.03	
Travelling expenses	192.15	
Washing	38.57	
Water-rates	57.17	
		$ 66.850.85
Appropriation	$ 67,000.00	
Amount of expenses	66,850.85	
Balance unexpended	$ 149.15	

For Public Squares.

Carpenter's work	$ 18.35
Entrance-posts, Common in Ward One	108.50
Expressage	13.55
Forester's services	999.50
Gravel and carting	144.20
Amount carried forward	$ 1,284.10

Amount brought forward		$1,284.10	
Horse-hire		384.00	
Incidental expenses of Forester		57.69	
Labor		1,817.37	
Manure, loam, and carting		131.85	
Mower		22.00	
Painting and repairing fences		356.27	
Painting and lettering signs		16.15	
Plank walk		57.15	
Raising and lowering topmasts		42.00	
Rent of land		10.00	
Rope, paint, etc.		18.30	
Seats on Common		13.50	
Snow-plough		10.00	
Tools, ladders, and repairs		42.05	
Trees and plants		79.62	
Water for hose		80.00	
Water for drinking-fountains		1,245.00	
			$5,667.05
Appropriation	$5,000.00		
Additional appropriation	1,500.00		
		$6,500.00	
Amount of expenses		5,667.05	
Balance unexpended		$832.95	

For Salaries of City Officers.

Mayor	$2,312.50	
Treasurer	2,775.00	
City Clerk	2,000.00	
Auditor	925.00	
City Solicitor	2,000.00	
Clerk of Committees	1,500.00	
Clerk of Common Council	300.00	
Board of Assessors	4,875.00	
Treasurer of Sinking-Funds	525.00	
Inspector of Milk	200.00	
Sealer of Weights and Measures	425.00	
Messenger	1,500.00	
		$19,337.50

Appropriation	$19,337.50
Amount of expenses	19,337.50

For Sewers.

Assessments refunded	$1,318.46	
Building sewers and cesspools	20,349.75	
Brick	213.48	
Carpenter's work	209.57	
Cleaning cesspools	966.00	
Engine, use of	86.50	
Expressage	.25	
Fuel	115.58	
Gravel and stone	91.50	
Hose-reel, etc.	21.66	
Labor	15.00	
Lumber and cement	191.96	
Paving	9.72	
Pipe	876.29	
Printing and advertising	27.25	
Repairs	778.50	
Right to use sewer	291.00	
Securing piles	40.00	
Tools, oil, etc.	48.26	
		$25,650.73

Appropriation	$30,000.00
Amount of expenses	25,650.73
Balance unexpended	$4,349.27

For Sewer in Binney Street.

Ballasting sewer	$3,913.64	
Grading	535.50	
Gravel	2,571.00	
		$7,020.14

Appropriation	$7,020.14
Amount of expenses	7,020.14

For Sewer in Bridge Street.

Concreting	$128.32	
Dredging	200.00	
Extension	2,400.00	
Gravel	106.50	
Pipe	2,016.00	
		$4,850.82
Appropriation	$5,000.00	
Amount of expenses	4,850.82	
Balance unexpended	$149.18	

For Sinking-Fund of Water-Works.

Amount paid Trustees of fund		$45,000.00
Appropriation	$45,000.00	
Amount of expenses	45,000.00	

For Sinking-Funds.

Amount paid Commissioners		$155,265.00
Appropriation	$155,265.00	
Amount of expenses	155,265.00	

For Stationery and Printing.

Binding records	$3.25	
Blank books, etc.	62.29	
Mounting voting-lists	15.00	
Printing	1,212.34	
Printing city documents	1,195.80	
Printing voting-lists	250.00	
Stamps and envelopes	268.77	
Stationery	259.62	
		$ 3,267.07
Appropriation	$3,500.00	
Amount of expenses	3,267.07	
Balance unexpended	$232.93	

For Streets.

Boring gravel-bank at Lexington		$ 54.00
Car-tickets		10.00
Carts and repairs		1,107.64
Damages		118.00
Dies for stamps		5.25
Fuel		44.80
Gas		76.56
Gravel and stone		25,387.91
Grading Vine Street		1,187.96
Hay, grain, and straw		4,424.30
Harnesses and repairs		268.65
Horse		350.00
Horse-shoeing		765.35
Labor		40,220.99
Lumber and cement		269.25
Oil, matches, etc.		80.32
Painting and lettering signs		40.50
Printing and advertising		27.75
Pung		50.00
Rent of land for storage		75.00
Repairs and iron-work		320.70
Roller		300.00
Salary of Superintendents		1,475.00
Setting trees in Brattle Street		214.35
Steeling and sharpening tools		517.25
Supplies at stable		40.21
Time book		7.25
Tools, hardware, etc.		229.45
Veterinary services		103.25
Water-rates		46.00
		$ 77,817.69
Appropriation	$ 75,000.00	
Additional appropriation	8,246.68	
		$ 83,246.68
Amount of expenses		77,817.69
Balance unexpended		$ 5,428.99

For Supply Account of Water-Works.

Castings and labor		$65.13	
Cement		4.70	
Expressage		2.85	
Horse-shoeing		12.51	
Meters		235.50	
Painting fountains		55.95	
Plumbing		87.95	
Rent of shop, two years		400.00	
Repairs of harnesses		8.90	
Sharpening tools		37.40	
Sundry workmen		2,223.83	
Supplies		820.29	
Tools and iron-work		50.36	
Valvoline		101.67	
			$4,107.04
Appropriation		$10,000.00	
Amount of expenses	$4,107.04		
Transferred	850.00		
		$4,957.04	
Balance unexpended		$5,042.96	

For Surrendered Estates.

Paid for estates surrendered		$119,257.46	
Printing and postage		3.50	
Services of Appraisers		610.00	
			$119,870.96
Appropriation	$75,000.00		
Additional appropriation	50,000.00		
		$125,000.00	
Amount of expenses		119,870.96	
Balance unexpended		$5,129.04	

For Text-Books and Stationery for Schools.

Aids for object teaching		$3.33
Books and stationery furnished to children		4,034.34
Books and stationery for schools		611.40
Expressage		1.40
Map		4.00
Slated globe		4.50
Stamped envelopes		2.83
		$4,661.80
Appropriation	$4,000.00	
Additional appropriation	700.00	
	$4,700.00	
Amount of expenses	4,661.80	
Balance unexpended	$38.20	

For Truant Officers.

Services of officers		$5,041.65
Appropriation	$5,000.00	
Additional appropriation	50.00	
	$5,050.00	
Amount of expenses	5,041.65	
Balance unexpended	$8.35	

For Vacation Schools.

Appropriation	$500.00
Transferred	500.00

For Volunteers and their Families.

Amount paid to soldiers' families	$19,000.00	
Services in examining claims	249.00	
		$19,249.00
Appropriation	$20,000.00	
Amount of expenses	19,249.00	
Balanced unexpended	$751.00	

For Watering Streets.

Blank books and stationery		$15.55	
Repairing carts		275.84	
Superintendent's salary		325.00	
Watering		9,424.10	
			$10,040.49
Appropriation		$16,000.00	
Amount of expenses	$10,040.49		
Transferred	1,105.00		
		$11,145.49	
Balance unexpended		$4,854.51	

For Widening and Extension of Streets.

Cedar Street		$256.40	
North Avenue		102.95	
Porter Street		46.40	
Putnam Avenue		418.75	
Sparks Street		964.93	
Spruce Street		52.15	
Warren Street		2,146.10	
Watson Street		514.00	
			$4,501.68
Appropriation	$4,500.00		
Additional appropriation	25.00		
		$4,525.00	
Amount of expenses		4,501.68	
Balance unexpended		$23.32	

RECAPITULATION OF EXPENDITURES FOR THE FINANCIAL YEAR ENDING NOVEMBER 30, 1877.

	Original Appropriations.	Added subsequently.	Subtracted subsequently.	Appropriations as altered.	Amount of Expenditures.	Balances unexpended.
Alterations of School-Houses	$5,500.00	.....	$1,500.00	$4,000.00	$2,920.83	$1,079.17
Almshouse and Care of the Poor	75,000.00	.....	.....	75,000.00	70,694.83	4,305.17
Cambridge Free Dispensary	1,000.00	.....	.....	1,000.00	1,000.00	
Care and Repairs of Bridges	8,000.00	.....	.....	8,000.00	7,894.02	105.98
Care, etc., W. Boston, Craigie's, and Prison Point Bridges	16,000.00	.....	.....	16,000.00	14,963.39	1,036.61
Care and Repairs of School-Houses	31,000.00	.....	3,000.00	28,000.00	22,971.75	5,028.25
Care and Repairs of Surrendered Estates	5,000.00	.....	.....	5,000.00	3,119.06	1,880.94
Care and Repairs of Water-Works	25,000.00	$850.00	.....	25,850 00	25,846.96	3.04
Cemeteries	12,000.00	.....	.....	12,000.00	10,640.78	1,359.22
City Engineering	7,800.00	.....	.....	7,800.00	6,724.87	1,075.13
Compensation of Secretary of School Committee	300.00	.....	.....	300.00	300.00	
Dana Library	6,500.00	.....	.....	6,500.00	6,042.73	457.27
Evening Drawing Schools	1,200.00	.....	.....	1,200.00	792 05	407.95
Evening Schools for Adults	4,000.00	.....	.....	4,000.00	3,877.23	122.77
Extension of Water-Works	30,000.00	.....	.....	30,000.00	15,881.98	14,118.02
Fire Department	65,500 00	3,025.00	.....	68,525 00	68,512.66	12.34
High School Apparatus and Books of Reference	100.00	.....	.....	100.00	43.58	56.42
Hopkins Fund	900.00	.....	900.00	.....	.....	
Incidental Expenses	40,000.00	830.00	.....	40,830.00	40,408.50	421.50
Incidental Expenses of Public Schools	1,200.00	.....	.....	1,200.00	1,050.58	149.42
Instruction in Public Schools	149,700.00	900.00	.....	150,600.00	146,905.00	3,695.00
Interest and Bank Discounts	300,000.00	.....	.....	300,000.00	293,900.47	6,099.53
Lighting Streets	24,000.00	.....	.....	24,000.00	21,218.47	2,781.53
Paving	17,000.00	.....	8,271.68	8,728.32	7,223.49	1,504.83
Police and Watch	67,000.00	.....	.....	67,000.00	66,850.85	149.15
Public Squares	5,000.00	1,500.00	.....	6,500.00	5,667.05	832 95
Salaries of City Officers	19,337.50	.....	.....	19,337.50	19,337.50	
Sewers	30,000.00	.....	.....	30,000.00	25,650.73	4,349.27
Sewer in Binney Street	7,020.14	.....	.....	7,020.14	7,020.14	
Sewer in Bridge Street	5,000.00	.....	.....	5,000.00	4,850 82	149.18
Sinking-Fund of Water-Works	45,000.00	.....	.....	45,000.00	45,000 00	
Sinking-Funds	155,265.00	.....	.....	155,265.00	155,265.00	
Stationery and Printing	3,500.00	.....	.....	3,500 00	3,267.07	232.93
Streets	75,000.00	8,246.68	.....	83,246.68	77,817.69	5,428.99
Supply Account of Water-Works	10,000.00	.....	850.00	9,150.00	4,107.04	5,042.96
Surrendered Estates	.....	125,000.00	.....	125,000.00	119,870.96	5,129 04
Text-Books and Stationery for Schools	4,000.00	700.00	.....	4,700.00	4,661.80	38.20
Truant Officers	5,000.00	50.00	.....	5,050.00	5,041.65	8.35
Vacation Schools	500.00	.....	500.00	.....	.....	
Volunteers and their Families	20,000.00	.....	.....	20,000.00	19,249.00	751.00
Watering Streets	16,000.00	.....	1,105.00	14,895.00	10,040.49	4,854.51
Widening and Extension of Streets	4,500.00	25.00	.....	4,525.00	4,501.68	23.32
Amount of appropriations	$1,298,822.64	.....	.....	$1,423,822.64	$1,351,132.70	$72,689.94
Amount of expenditures	.....	.....	.....	1,351,132,70		
Balances unexpended	.....	.....	.....	$72,689.94		

The appropriation for Hopkins Fund was transferred to Instruction in Public Schools. The creation of a City Debt of $125,000 was authorized for Surrendered Estates, subsequent to the annual appropriations.

The schedule of the City Debt and the Report of the Treasurer are herewith presented.

Respectfully submitted.

FRANK A. ALLEN,
WALTER S. SWAN,
EDMUND REARDON,
PEREZ G. PORTER,
GEORGE F. WHITING,
ARCHIBALD M. HOWE,
EDWARD P. TUCKER,
Z. H. THOMAS, Jr.,
HENRY A. DOHERTY,

Committee on Finance.

SCHEDULE OF CITY DEBT.

Date.	Rate.	To whom Payable.	Amount.	Total.	When Payable.	Interest paid to
July 1, 1858	5	Cambridge City Bonds	$ 7,000.00		July 1, 1878	July 1, 1877
July 1, 1859	5	" "	15,000.00		July 1, 1879	July 1, 1877
Aug. 1, 1862	5	" "	30,000.00		Aug. 1, 1882	Aug. 1, 1877
Sept. 10, 1862	5	" "	40,000.00		Sept. 10, 1882	Sept. 10, 1877
Sept. 10, 1862	5	" "	500 00		Sept. 10, 1877	Sept. 10, 1877
Nov. 20, 1862	5	" "	14,000.00		Nov. 20, 1882	Nov. 10, 1877
Mar. 5, 1863	5	" "	150,000.00		Jan. 1, 1893	July 1, 1877
April 1, 1864	5	" "	100,000 00		April 1, 1889	Oct. 1, 1877
July 1, 1870	6	" "	20,000.00		July 1, 1890	July 1, 1877
July 1, 1871	6	" "	100,000.00		July 1, 1881	July 1, 1877
July 1, 1871	6	" "	100,000.00		July 1, 1886	July 1, 1877
Nov. 30, 1877	4½	City Note	20,000.00		Oct. 10, 1878	
				596,500.00		
July 1, 1856	6	Water Loan: Cambridge City Bonds	50,000.00		July 1, 1881	July 1, 1877
May 1, 1865	6	" " "	300.00		May 1, 1875	May 1, 1875
Aug. 1, 1865	6	" " "	55,000.00		Aug. 1, 1883	Aug. 1, 1877
July 2, 1866	6	" " "	100,000.00		July 2, 1886	July 2, 1877
April 1, 1867	6	" " "	150,000.00		April 1, 1887	Oct. 1, 1877
April 1, 1868	6	" " "	175,000.00		April 1, 1888	Oct. 1, 1877
May 1, 1869	6	" " "	112,000.00		May 1, 1889	Nov. 1, 1877
July 1, 1870	6	" " "	60,000.00		July 1, 1890	July 1, 1877
May 1, 1871	6	" " "	50,000.00		May 1, 1891	Nov. 1, 1877
Mar. 20, 1873	6	" " "	335,000.00		July 1, 1892	July 1, 1877
April 1, 1874	6	" " "	150,000.00		July 1, 1894	Oct. 1, 1877
April 1, 1875	6	" " "	157,000.00		April 1, 1895	Oct. 1, 1877
April 1, 1875	6	" " "	3,000.00		April 1, 1895	Oct. 1, 1877
July 1, 1876	6	" " "	103,000.00		July 1, 1896	July 1, 1877
July 1, 1877	6	" " "	16,000.00		July 1, 1897	
				1,516,300.00		
Mar. 20, 1873	6	Funding Loan: Cambridge City Bonds	215,000.00		July 1, 1883	Oct. 1, 1877
July 1, 1874	6	" " "	100,000.00		July 1, 1884	July 1, 1877
July 1, 1875	6	" " "	24,000.00		July 1, 1885	July 1, 1877
				339,000.00		

Mar. 20, 1873	6	Paving Loan: Cambridge City Bonds	100,000.00		July 1, 1893	July 1, 1877	
July 1, 1874	6	" " "	130,000.00		July 1, 1894	July 1, 1877	
July 1, 1875	6	" " "	25,000.00		July 1, 1895	July 1, 1877	
				255,000.00			
July 1, 1873	6	Sewer Loan: Cambridge City Bonds	136,000.00		July 1, 1903	July 1, 1877	
July 1, 1874	6	" " "	295,000.00		July 1, 1904	July 1, 1877	
July 1, 1875	6	" " "	104,000.00		July 1, 1905	July 1, 1877	
July 1, 1875	6	" " "	40,000.00		July 1, 1905	July 1, 1877	
Oct. 1, 1875	6	" " "	20,000.00		Oct. 1, 1895	Oct. 1, 1877	
July 1, 1876	6	" " "	29,000.00		July 1, 1896	July 1, 1877	
				624,000.00			
July 1, 1873	6	Street Widening Loan: Cambridge City Bonds	10,000.00		July 1, 1903	July 1, 1877	
July 1, 1874	6	" " " "	90,000.00		July 1, 1904	July 1, 1877	
July 1, 1875	6	" " " "	14,000.00		July 1, 1905	July 1, 1877	
July 1, 1876	6	" " " "	7,000.00		July 1, 1886	July 1, 1877	
				121,000.00			
July 1, 1873	6	Building Loan: Cambridge City Bonds	119,000.00		July 1, 1883	July 1, 1877	
April 1, 1874	6	" " "	198,000.00		April 1, 1884	Oct. 1, 1877	
July 1, 1875	6	" " "	17,000.00		July 1, 1885	July 1, 1877	
				334,000.00			
July 1, 1873	6	Street Loan: Cambridge City Bonds	13,000.00		July 1, 1893	July 1, 1877	
				13,000.00			
July 1, 1873	6	Land Loan: Cambridge City Bonds	10,000.00		July 1, 1893	July 1, 1877	
				10,000.00			
July 1, 1872	6	Low-Land Loan: Cambridge City Bonds	15,000.00		July 1, 1882	July 1, 1877	
July 1, 1873	6	" " "	271,000.00		July 1, 1883	July 1, 1877	
April 1, 1874	6	" " "	240,000.00		April 1, 1884	Oct. 1, 1877	
Oct. 7, 1874	6	" " "	56,000.00		Oct. 1, 1884	Oct. 1, 1877	
July 1, 1875	6	" " "	122,000.00		July 1, 1885	July 1, 1877	
July 1, 1876	6	" " "	60,000.00		July 1, 1886	July 1, 1877	
Oct. 1, 1877	5	" " "	120,000.00		Oct. 1, 1887		
				884,000.00			
July 1, 1874	6	Bridge Loan: Cambridge City Bonds	94,000.00		July 1, 1884	July 1, 1877	
July 1, 1875	6	" " "	26,000.00		July 1, 1885	July 1, 1877	
				120,000.00			
Oct. 1, 1863	6	Trustees Daniel White Charity	5,000.00			Oct. 1, 1877	
June 1, 1858	6	Trustees Dowse Institute Fund	10,000.00			June 1, 1877	
Oct. 8, 1864	6	Trustees Sanders Temperance Fund	10,000.00			Oct. 8, 1877	
Nov. 30, 1877	6	Trustees Dana Library	1,000.00		Nov. 30, 1878		
				26,000.00			
		State Tax	52,155.00		Dec. 1, 1877		
		County Tax	30,576.65		Dec. 31, 1877		
				82,731.65			
				$ 4,921,531.65			

Dr. JOSEPH WHITNEY, TREASURER,

1876.			
Dec. 1.	Balance on hand		$27,157.58
	Of J. A. Jacobs, City Clerk, Auctioneers' Licenses	$46.00	
	" " Billiard "	8.00	
	" " Junk "	465.00	
	" " Junk Store "	10.00	
	" " Pawnbrokers' "	4.00	
	" " Bowling Alley "	2.00	
	" " Wagon Stand "	40.00	
	" " Carriage Stand "	16.00	
	" " Intelligence Office Licenses	4.00	
	" " Second-hand Dealers' "	18.00	613.00
	J. R. Fairbairn, rent surrendered estates		2,195.50
	Sundry persons, interest on assessments on estates sold to the City, and released, and for recording Deeds		236.97
	Ezra Parmenter, Bridge Commissioner, rent of building West Boston Bridge	35.00	
	" " " wharfage of schooner	10 00	
	" " " Damage to Craigie's Bridge	36 83	
	" " " Union Railway Company	30.75	112.58
	G. W. Lamson and L. C. Clark, Rent		266.62
	James Pike, interest on bond		386.45
	P. H. Raymond, Chief Engineer, proceeds sale of old copper	56.71	
	" " " " ladder	1 25	
	" " " " furniture	1.00	
	" " " " flagstaff	10.00	
	" " " " manure	90.00	
	" " " " use of hand-engine	10.00	177.96
	George H. Copeland, Chief of Police, Circus licenses	100.00	
	" " " use of ropes and stakes	12 00	112.00
	H. K. Parsons, proceeds sale of old stove		16.00
	J. W. Gardner, aid given to E. Edwards and refunded		1.00
	G. W. White, City Forester, for trees, etc		50.00
	O. C. Shepard, interest on Drain assessments		35.05
	W. A. Saunders " " "		4.20
	County of Middlesex, Dog Taxes refunded	2,759.94	
	" " rent Police Court-room	350.00	3,109.94
	State of Massachusetts, Corporation Tax	656.02	
	" " Armory rents	1,200.00	1,856.02
	Trustees Hopkins charity		846.34
	Cambridge Water-Works, rent of office and shop		1,200.00
	Trustees Dana Library, proceeds sale of old stoves and stove-pipe		12 00
	Cambridge Choral Society, use of gas at rehearsals		25.00
	Boston Ice Company, damage to street lamp on Bridge Street		11.00
	Amount overpaid Teacher of Evening School and refunded		3.00
	S. P. Shepherd, grass sold		3.00
	H. A. Royce and Company, discount on bill		4.02
	Albert Higgins, five second-hand doors, $5.00		25.00
	John Coolidge, Jr., Tuition at High School		50.00
	Net proceeds of sale at Almshouse, April 9, 1877		373.00
	Commissioners of the Sinking-Funds of the City, interest on Temporary Loan		339.13
	City of Somerville, five ninths of the expense of extending Bridge Street sewer		2,694.90
	Joseph Whitney, Collector Taxes of 1872	26.00	
	" " " 1873	343.45	
	" " " 1874	2,690.75	
	" " " 1875	62,984.71	
	" " " 1876	87,436 53	
	" " " 1877	782,353.77	
	" " interest on Taxes	9,637.40	945,472.61
	J. K. Farwell, Superintendent, Account of Cambridge Cemetery		12,420.07
	Overseers of the Poor, Account of Cambridge Almshouse		13,470.14
	S. P. Sharples, Sealer, Account of Sealers' Fees		265.12
	A. L. Hayward, Librarian, Account of Dana Library		130.70
	S. P. Shepherd, Superintendent, Account of Street Department		115 04
	T. McIntire, Clerk, Account of Police Court		4,759.90
	J. R. Fairbairn, Agent sales surrendered estates		1,700.00
	Sundry persons, Weighing Fees		89.70
	" Watering Streets		8,309 95
	" Liquor Licenses		26,475.00
	" Paving Assessments		354.63
	" Drain "		9,714 58
	" Grading Assessments, Washington Street District		7,233.60
	" " " Cowperthwaite Street District		2,294.06
	" " " Cambridge Street District		858.11
	" " " Franklin Street District		1,933.50
	" " " Sparks Street District		141.61
	Interest on Grading Assessments, Washington Street District		1,011.11
	" " " Cowperthwaite Street District		108.61
	" " " Cambridge Street District		60.38
	" " " Franklin Street District		28.50
	" " " Sparks Street District		5.72
	Sundry persons, for perpetual care of lots Cambridge Cemetery		200.00
	Sale of City Bonds, Water Loan		16,000.00
	" " Low-Land Loan		120,000.00
	Accrued Interest on Bonds, Water Loan		397.33
	" " " Low-Land Loan		983.33
	City Notes		21,000.00
	Cambridge Water-Works, rates, supplies, etc		166,421.06
	State of Massachusetts, Corporation Tax	24,635.99	
	" " National Bank Tax	19,320.69	
	" " State Aid	16,000 00	59,956.68
	Sundry persons and institutions, Temporary Loan		633,595.86
	James Pike, payment on bond		1,527.00
			$2,098,951.16

IN ACCOUNT WITH THE CITY OF CAMBRIDGE. *Cr.*

1876.		
Dec. 1.	By Paid State of Massachusetts, State Tax	$ 62,586.00
	" " Bank Tax	6,397.50
	" " under the provisions of the Act to regulate the sale of Intoxicating Liquors	6,618.75
	County of Middlesex, County Tax	21,840.47
	Sundry persons, per Mayor's Drafts and Orders	1,072,866.28
	" " and institutions, Temporary Loan	633,595.86
	" " interest Temporary Loan	14,032.07
	" " " Permanent Loan	279,742.55
	Commissioners of Cambridge Cemetery, Interest on fund for the perpetual care of Lots	125.85
	Trustees Cambridge Water-Works, accrued interest on Water Bonds sold	266.67
	Balance on hand	879.16
		$ 2,098,951.16

JOSEPH WHITNEY, *Treasurer.*

REPORT

OF THE

COMMISSIONERS OF THE SINKING-FUNDS.

To the Honorable the City Council:—

The undersigned, Commissioners of the Sinking-Funds of the City, in compliance with Section 8 of an Ordinance in relation to Sinking-Funds, passed December 22, 1875, herewith respectfully submit their second Annual Report, showing the present condition of the funds to be as follows, viz.:—

Amount of the Funds December 1, 1876		$519,827.18
Received interest on the Funds for the year		29,842.42
Received from the City under the Ordinance relating to the Sinking-Funds passed December 22, 1875		155,265.00
Total assets for the year		$704,934.60
Less amount paid City debt due April 6, 1877	$30,000.00	
Less amount paid City debt due September 10, 1877	29,500.00	
Paid City of Cambridge, interest on amount advanced April 6 and September 10 to November 30, 1877	339.13	
Paid accrued interest on bonds purchased November 30, 1877	1,206.17	
Paid premium on bonds purchased	755.00	61,800.30
Total amount of Funds December 1, 1877		$643,134.30
Accrued interest on Funds December 1, 1877, payable January 1, 1878		14,363.76
Actual value of Funds December 1, 1877		$657,498.06

Said Fund is invested as follows, viz.: —

Bonds of the City of Cambridge (at par) . . .	$496,000.00
Bond " " " " " (registered) . .	120,000.00
Bonds " " Town of Arlington	6,000.00
Notes secured by mortgage	15,106.89
Note of Massachusetts Loan and Trust Company .	5,300.00
Cash on hand	727.41
	$643,134.30

The Commissioners would call the especial attention of the City Council to the fact that it has not been possible, the past year, to obtain such securities as are allowed them by the statute, for investment at the par, to earn more than five per cent interest, and as the amount received from the City annually is the minimum sum, based upon a six per cent investment, that will earn the required amount, a larger sum will be found necessary in the future to be paid the Commissioners, to make up this deficiency. The spirit and intention of the statute of 1875 contemplates the amount paid to be a sufficient sum to pay off all the City debt proper from this fund as it shall become due, and we deem it our duty to ask of the City Council that such additional sum may be allowed as shall make up for any and all possible deficiency.

CHAS. H. SAUNDERS,
ROBT. DOUGLASS,
JOS. A. HOLMES,
JOHN M. TYLER,
SAML. SLOCOMB,
SAML. L. MONTAGUE,
Commissioners of the Sinking-Funds of the City.

CAMBRIDGE, December 11, 1877.

REPORT

OF THE

TRUSTEES OF THE SINKING-FUND OF THE CAMBRIDGE WATER-WORKS.

The undersigned, Trustees of the Sinking-Fund of the Cambridge Water-Works, respectfully submit the following Report: —

Amount of Fund, June 30, 1876 . .		$177,138.83
Received of the City, under an Ordinance passed Oct. 4, 1876, an amount equal to three per cent on outstanding Water Loan Bonds	$45,000.00	
Received accrued interest on bonds sold	1,281.67	
Received interest on Fund . . .	9,313.63	
		$55,595.30
Amount of Fund, June 30, 1877 . .	$232,734.13	
Interest on Fund, accrued but not due .	3,682.50	
Value of Fund, June 30, 1877 . .		$236,416.63

It has been the custom of the Trustees heretofore to state the value of this Fund up to June 30 only of each year. In order to show its value at the close of the financial year, November 30, to which date all other accounts are made up, we present the following exhibit: —

Amount of Fund, June 30, as above . . .	$232,734.13
Received interest on Fund to Nov. 30 . . .	6,347.15
	$239,081.28

Amount brought forward	$ 239,081.28
Less amount paid for accrued interest on bonds purchased for investment	930.66
Amount of Fund, November 30, 1877 . .	$ 238,150.62
Accrued interest on Fund	3,676.66
Value of Fund November 30, 1877 . . .	$ 241,827.28

The Fund is invested as follows: —

Cambridge Water Bonds, bearing six per cent interest, par value $ 193,300.00, cost	$ 197,218.75	
City of Providence, five per cent bonds payable September 1, 1882, par value $ 40,000, cost	40,800.00	
Cash on hand	131.87	
		$ 238,150.62

The "value" of the Fund, as represented above, includes the sum of $ 4,718.75, paid as premium above par on bonds purchased by the Trustees as an investment. The Cambridge Water Bonds have all been punched, making them non-negotiable, and no more than their par value can be realized from them. The premium on the other bonds purchased, will also be absorbed if they are held for investment, as they are likely to be, until they mature. Deducting the amount paid for premiums leaves the real value of the Fund at par, November 30, 1877, $ 237,108.53.

FRANK A. ALLEN,
PEREZ G. PORTER,
JOS. WHITNEY,
} *Trustees.*

REPORT

OF THE

JOINT STANDING COMMITTEE ON PUBLIC PROPERTY.

The Joint Standing Committee on Public Property herewith submits its final Report: —

Your Committee desires to present a brief review of its action upon the various matters committed to its charge during the year, together with a schedule of the real estate owned by the city, all of which has been under its immediate care, except those portions belonging to the Cambridge Cemetery and Cambridge Water-Works.

The duties of the Committee within the past year have been largely increased by the numerous surrenders of estates in the several districts which were raised to grade. The whole number of such estates as have been paid for, of which the City is now or has been actually in possession, and the cost of the same in the several districts, is as follows: —

Cambridge Street District.		
8 Estates, costing		$42,959.29
Miller's River District.		
2 Estates, costing		2,453.30
Washington Street District.		
1 Estate, So. Dock & So. Canal, costing	$6,150.00	
1 Estate, Harvard Street, formerly of Fanny E. Hunt	5,423.33	
		11,573.33
Cowperthwaite Street District.		
3 Estates, costing		10,136.10
Franklin Street District.		
25 Estates (including one estate sold by city) costing		96,947.50
Total, 40 Estates		$164,069.52

The foregoing amount includes such estates as were paid for during the month of December, 1877, but is exclusive of the cost of care and repair in 1876 of the estates surrendered up to the close of that year, and it does not include the interest which in many cases had accrued up to the dates of the various settlements.

In addition to the foregoing, there are also two large estates in the Sparks Street District, formerly of C. B. Barrett and George Bancroft, the valuation of which, by the Board of Appraisers, was $15,500. Although the City now has full possession of this property, the matter of settlement therefor is in litigation on an appeal by the late owners from the award made by a sheriff's jury.

Including the above-named, there are in all forty-one estates in charge of your Committee that have been surrendered to the City under the provisions of the several statutes relating to low-land filling. By an order of the City Council, this Committee was made the custodian of this property, with authority to appoint a suitable person to take charge of the same and collect such rents as might become due, and pay the amount into the City Treasury.

Agreeably to the aforesaid order, Mr. John R. Fairbairn was appointed as the agent of the city to take charge of all the surrendered estates. During the financial year ending November 30, 1877, he has collected and paid into the City Treasury, for rents received, the sum of $2,195.50

The amount expended for repairs upon these estates was	$1,804.53	
Water-rates	897.92	
Care of property, collecting rents, etc. .	580.70	
Total	$3,283.15	

The sums named below have also been received from the sale of portions of the surrendered estates, by your Committee, under authority of the City Council:

Unfinished house on Langley estate, removed, Cambridge Street District	$300.00
Lot of land and unfinished house, formerly of J. Dana Hovey, in Franklin Street District	600.00
Houses and part of surrendered land, formerly of C. Daily, Franklin Street District	1,200.00
Total	$2,100.00

The sums realized were their estimated cost to the City, including the filling, as abated by the Appraisers.

Your Committee has from time to time given personal inspection to the several estates, with reference to their condition of repair and the proper amounts which should be received as rents, and it is believed that the arrangements now existing with the tenants are such as subserve the interests of the City. Much of the surrendered property consists of unoccupied land, productive of no income, while of the remainder, several of the houses are not in tenantable repair. Four small double cottages of four rooms in each tenement, formerly of the Bancroft estate, are uninhabitable without repairs to such an extent as your Committee has not felt justified in asking for authority to make.

The income derived from the surrendered estates in the several districts bears but a slight relation to the interest on the cost, owing to the large area of land and inferior character of the buildings; but we trust the future will justify the opinion expressed in a recent report of the Board of Appraisers that "a careful management of the property which has come into the possession of the City will in a few years, when sold, bring back in all the productive portion its cost."

Appropriations and Expenditures.

The aggregate amount placed at the disposal of your Committee at the beginning of the year was for

Care and repairs and alterations of School-houses		$ 35,000.00
Amount expended		25,892.58
Leaving a balance unexpended of . . .		$ 9,107.42
Another appropriation placed in charge of the Committee was that for public squares, the amount of which was originally .	$ 5,000.00	
Increased subsequently by addition of	1,500.00	
Total		$ 6,500.00
Amount expended		5,667.05
Leaving a balance unexpended of . . .		$ 832.95

Public Squares.

The Committee has felt that for a series of years the public squares have not received the attention that they should have, and it has been its aim to render them more pleasing to the public,

believing the money spent for such an object to be well invested and bringing its immediate return in the enjoyment given to the masses. The efforts of the Committee have been most heartily seconded by George W. White, Esq., and the workmen under his immediate direction. We trust that our successors may give that attention to our public squares which will each year render them more attractive.

City Buildings.

One of the first acts of your Committee in entering upon its duties in January last was to summon before it the various janitors of the schools and public buildings. From each of these officers a full statement was received of the amount of labor performed, hours of service per day, and a schedule of tools and implements in their charge owned by the City and used in the performance of the work required in each building. The salaries of these janitors were revised and fixed by the Committee according to the duties required of each. Your Committee expresses its hearty commendation of the faithful and efficient manner in which the several janitors have carried out its wishes in the watchful care they have given to the property intrusted to their charge. A careful revision was also made of the salaries of all persons employed in other departments of the City whose monthly bills are presented to this Committee for approval. A special personal care of the different City buildings has also been exercised by the individual members of the Committee. Under authority of the City Council from time to time given to your Committee, the hereinafter-named sums have been expended for alterations and repairs of City buildings, to wit: —

Alterations of Hook and Ladder House No. 2	$1,487.62
Alterations of Engine House No. 5	100.00
Repairs of School-houses during vacation, including new furnaces	2,976.62
New heating apparatus in Willard Primary School building	2,941.22
Alterations of Bridge Primary School-house	325.00
Refurnishing Hook and Ladder House No. 2	198.25
Repairs Police Station 6, Main Street	150.00
Painting fence of Cambridge Common, Ward 1	124.00
Painting fence of Common, Ward 2	63.00
Total	$8,365.71

In each of the foregoing cases of extra repairs the necessity of the work was urgent. The Hook and Ladder House No. 2, on Cambridge Street, had no suitable accommodations for men who lodged there, the sleeping-room being directly over the stalls of the horses and subject to all the odors from beneath. The large sum expended upon school-houses during the summer vacation was necessitated by the unsatisfactory condition of many of the buildings as regards heating facilities, — new furnaces being required in several instances, — and the general renovation customary in the summer vacation.

The condition of the Willard school-house, on account of imperfect heating and ventilation, had been a source of complaint ever since its construction, and the improvement there made was absolutely demanded by the exigencies of the case. The same work would have been done by the Committee of last year, had not the order failed to receive proper consideration in one branch of the City Council prior to the summer vacation of 1876. The work of putting in new heating apparatus in this school-house was done under a contract by the Walworth Manufacturing Company, which was the lowest bidder.

The other expenditures carried forward under the direction of your Committee were made in the interest of economy, and with a view to prevent the necessity of larger outlays in the future.

Stone Ledge.

The matter of the sale of the Stone Ledge at the Almshouse to Dr. R. M. Otis has occupied the attention of your Committee, and early in the year steps were taken to close his connection with the property, he having failed to comply with the terms of his agreement concerning it. An order was adopted by the City Council in April last, upon the recommendation of this Committee, instructing Dr. Otis that unless certain conditions named therein were complied with on or before the 1st of May, the city would hold itself released from all obligations under the bond previously given to him under the sale. The Ledge is now under the direction of the Almshouse, the interest in it of Dr. Otis has ceased, and the matter has thus passed from the control of the Committee on Public Property.

The Committee presents the following

Schedule of Property

owned by the city at the close of the year ending Dec. 31, 1877 : —

Almshouse Building.

Foot of Tannery Street, Ward 5. Also 12.688 acres of land in Cambridge, and 18.870 acres of land in Somerville. Also stone ledge, located on Almshouse land.

Cemeteries.

Cambridge Cemetery. Foot of Coolidge Avenue, containing 40.8129 acres of land.

Burial Ground. Garden Street, junction North Avenue, containing 77,452 square feet of land.

Commons and Public Squares.

Cambridge Common. Garden Street, North Avenue, and Waterhouse Street. Area about 359,936 square feet.

Public Square. Between Waterhouse Street and North Avenue. Area about 13,112 square feet.

Public Square. Garden and Chauncy Streets, and Concord Avenue. Area about 3,337 square feet.

Public Square. Between Waterhouse Street and North Avenue. Contents about 340 square feet.

Public Square. Between Holmes Place and Cambridge Street. Contents about 15,664 square feet.

Public Square. North Avenue, corner of Kirkland Street, on south corner. Contents about 23,243 square feet.

Public Square. North Avenue, corner of Kirkland Street, on north corner. Contents about 32,080 square feet.

Common. Junction Broadway and Main Street. Contents about 1,539 square feet.

Common. Broadway, corner of Norfolk Street. Contents about 102,814 square feet.

Fort Washington. Waverley Street. Contents of land about 42,023 square feet.

Common. Junction of Pleasant and River Streets. Contents about 7,554 square feet.

Hastings Square. Brookline, Chestnut, and Henry Streets. Area about 30,000 feet.

Dana Square. Lake, Magazine, Lawrence, and Niagara Streets. Area about 33,543 square feet.

Winthrop Square. Brighton, Winthrop, and Mt. Auburn Streets. Area about 11,802 square feet.

Public Square. In front of Universalist church, junction of Main and Front Streets. Area 1,800 feet.

City Lands.

Lot on Franklin, Auburn, and Sydney Streets, containing about 80,000 feet.

Lot on Auburn, Pilgrim, and Sydney Streets, containing about 84,732 feet, with house and shed thereon, owned by Water-Works.

Lot on Sydney Street, east side, near Auburn Street, containing about 26,034 feet.

Lot on Cambridge, corner Portland Street, containing about 111,626 feet.

Lot, junction of Arrow and Main Streets, containing about 717 feet.

Lot, junction of Hampshire Street and Broadway, containing about 591 feet.

Lot on Sixth Street. East, west, and rear lots on South Dock and South Canal. About 9,546 square feet.

Gravel Pit in Belmont, Concord Avenue, containing about 471,148 square feet.

City Buildings.

Ward One Building, Brattle Square, and land, containing about 13,066.5 square feet.

Ward Four Building, junction Western Avenue and Green Street, and about 25,765 square feet of land.

City Hall, Main Street, corner Pleasant Street, and about 8,914 square feet of land.

City Stables, Norfolk, Hampshire, and Tremont Streets, and about 51,280 square feet of land.

Engine Houses.

House No. 1, Eliot Square, corner Mt. Auburn Street, and land, about 16,146.5 feet.

House No. 2, Main Street, near Winsor, and land, about 3,444 feet.

House No. 3, Gore and Fourth Streets, and land, about 6,969 feet.

House No. 4, North Avenue, near corner Russell Street, and land, about 2,872 feet.

House No. 5, Hampshire Street, corner Inman, and land, about 6,000 feet.

House, Old, junction Western Avenue and River Street, and land, about 2,035 feet.

Drinking Fountains.

Fourteen Fountains for persons and animals.

Two Fountains for persons only, located in different parts of the city.

School-houses.

Allston, Boardman Street, about 15,152 feet of land.

Agassiz, Oxford Street, corner Sacramento Street, about 19,707 feet of land.

Boardman, Winsor Street, corner School Street, about 10,018 feet of land.

Bridge, Pioneer Street, Lower Port, about 4,471 feet of land.

Dunster, Concord Avenue, near Sparks Street, and about 10,000 feet of land.

Dana, Centre Street, and about 14,317 feet of land.

Felton, Amory Street, corner Summer Street, and about 15,000 feet of land.

Gore, Gore Street, between Third and Fourth Streets, and about 9,900 feet of land.

Gannet, Columbia Street, between Lincoln and Cambridge Streets, and about 8,806 feet of land; also, school-house lot adjoining, containing 10,000 feet.

Harvard (Grammar), Broadway, corner Inman Street, and about 20,678 feet of land.

Harvard (Primary), Harvard Street, near Prospect Street, and about 10,000 feet of land.

High School, Fayette Street, Antrim Street, and Broadway, and about 37,824 feet of land.

Holmes, Hilliard Street, and about 11,182 feet of land.

Mason, Front Street, corner Jennings Street, and about 10,000 feet of land.

Otis, Otis street, between Fifth and Sixth Streets, and about 8,095 feet of land.

Putnam, Otis Street, corner Fourth Street, and about 10,000 feet of land.

Quincy, Mason Street, corner James Street, and about 10,000 feet of land.

Reed, Reed Street, Ward 5, about 12,000 feet of land.

Riverside, Putnam Avenue, Ward One, about 11,200 feet of land.

Sargent, Broadway, corner Winsor Street, about 9,546 feet of land.

Shepard, North Avenue, near Russell Street, about 14,807 feet of land.

Thorndike, Thorndike Street, corner of Sixth Street, about 10,000 feet of land.

Willard, Lake, Lawrence, and Niagara Streets, about 20,054 feet of land.

Webster, Upton Street, about 25,765 feet of land.

Wyman, Spruce Street, corner Groveland Street, about 15,000 feet of land.

Washington, Brattle Street, corner Farwell Place, about 14,789 feet of land.

Surrendered Estates.

These estates have been surrendered to the city under the provisions of the statutes relating to low-land filling.

This list gives by whom surrendered and location of property.

Cambridge Street District.

Blanchard, Walter S. Jefferson Street. House and about 1,756 feet of land.

Donnelly, James, Heirs of. Hunting and Harding Streets. House and small barn, and about 4,031 feet of land.

Horigan, Jeremiah. Warren Street. Two Houses and about 6,510 feet of land.

Langley, Samuel. Hunting and Harding Streets. About 1,678 feet of land on Hunting Street; house and about 1,521 feet of land, No. 47 Harding Street; house and about 1,442 feet of land, No. 45 Harding Street.

Madden, D. & H. A. Willow and Harding Streets. House and about 6,064 feet of land.

Nourse, Susan M. Porter and Jefferson Streets. House and about 1,683 feet of land, Porter Street; lot of land, 7,746 feet, Porter Street; lot of land, 11,202 feet, Porter and Jefferson Streets.

Rafferty, B. Cambridge and Jefferson Streets. Old building, and about 24,955 feet of land.

Taunton Savings Bank. Corner McCabe and Jefferson Streets. Block of three houses, and about 3,375 feet of land, McCabe and Jefferson Streets; block of two houses, and about 2,600 feet of land, McCabe Street.

Miller's River District.

Dale, Thomas J. Rear of Winter Street. Three old buildings, and about 5,320 feet of land.

Davies, Benjamin F. Rear of Gore Street. Lot of land containing about 16,428 square feet. (Unadjusted.)

Moulton, H. & C. W. H. Rear of Gore Street. Lot of land containing about 17,575 square feet.

Tibbetts, Israel. Bridge Street. Lot of land containing about 3,765 feet. (Unadjusted.)

Cowperthwaite Street District.

Crane, Ann, Heirs of. Grant Street and DeWolf Street. Lot of land containing about 16,350 square feet.

Kneeland, Henry. Grant and Cowperthwaite Streets. House and about 4,000 feet of land on Cowperthwaite Street; lot of land, 4,000 feet, on Grant Street.

Winthrop, William, Heirs of. Athens Street. Lot of land, west side, 6,750 feet; lot of land, east side, 20,360 feet.

Sparks Street District.

Bancroft, George. Estates on Mt. Auburn and Willard Streets. Double house, 185 and 187 Mt. Auburn Street, and about 3,360 feet of land; double house, 197 and 199 Mt. Auburn Street, and about 2,870 feet of land; double house, 31 and 33 Willard Street, and about 3,080 feet of land; double house, 35 and 37 Willard Street, and about 3,080 feet of land; double cottage, 4 and 6 Dinsmore Court, and about 1,613 feet of land; double cottage, 8 and 10 Dinsmore Court, and about 1,613 feet of land.

Bancroft, George. Dinsmore Court. Double cottage, Nos. 12 and 14, and about 1,613 feet of land; double cottage, Nos. 13 and 15, and about 1,613 feet of land.

Washington Street District, South Dock and South Canal.

Bent Heirs. Dock and Sixth Streets; east lot containing 5,224 feet; west lot containing 7,699 feet; rear lot containing 29,482 feet.

Hunt, Fanny E. Harvard Street, north side, easterly of the estate of Bridget Manning; lot containing about 6,900 feet.

Franklin Street District.

Ahern, John. Rear Franklin, between Franklin and Green Streets. Two houses and about 2,442 feet of land.

Brassill, Daniel C. 29 Franklin Street. House and 1,920 feet of land.

Biggin, John. Franklin Street. Lot of land containing about 3,010 square feet.

Chamberlain, N. & G. D. Green Street, near Vernon. Double house and about 4,000 feet of land; lot of land opposite Vernon Street containing 5,195 feet.

Drinan, Maurice. Kinnaird Street. Lot of land, about 3,875 feet. (Unsettled.)

Daily, Cornelius. Hancock Street, near Green. Two houses, one unfinished, and about 4,130 feet of land.

Eagan, Martin. Kinnaird Street. Single house and about 2,500 feet of land; double house and about 4,520 feet of land.

Halloran, Mrs. Mary. 249 Franklin Street. Lot of land, about 3,042 feet.

Johnston, Thomas A. Green Street. Lot of land, about 4,782 feet.

Kelley & McKinnon. Howard Street. Two lots of land, about 7,200 feet.

Lonergan, Michael. Howard Street. Lot of land, about 3,600 feet. (Unsettled.)

Lynch, Richard. Hayes Court. Double house and about 4,325 feet of land.

Murphy, John. Franklin Street. House and about 2,530 feet of land. (Unsettled.)

Murphy, Daniel. Hancock Street. Two houses and about 3,167 feet of land.

Mullens, Michael. Green Street. House and about 3,750 feet of land.

Murdock, Heirs of Hannah S. Land as per their plan. Western Avenue, new street from Western Avenue to Hews Street, lots 1 to 45 inclusive, containing 52,059 square feet; Franklin Street, lots Nos. 13, 14, 15, containing 11,500 square feet; Kinnaird Street, lots 16 to 21 inclusive, containing 22,240 square feet; Jay and Kinnaird Streets, lot 27 and about one half of lot 26, contents 2,810 square feet. Total area, 88,609 square feet.

Murdock, Walter H. and Mary L. Land as per their plan. Hews Street and new street. Lots 16 to 26 inclusive (about one half of latter lot); lots 29 to 45 inclusive, — in all 80,273 square feet.

McDonald, Martin. 105 Kinnaird Street. Large house, small house, and about 4,300 feet of land.

Mara, Thomas. Hayes Court. Double house and 4,255 feet of land.

O'Brien, Jeremiah. Hancock Street. House and store and 1,768 feet of land.

Quilter, Michael. 238 Franklin Street. House and about 2,752 feet of land.

Read, J. Stacey. Franklin Street. Lot of land containing 21,130 feet; lot of land containing 3,833½ feet. Kinnaird Street, lot of land containing 17,646 feet. Howard and Kinnaird Streets, lot of land containing 8,174 feet.

Perkins, John P. Bay Street. House and 1,880 feet of land.

Wildes, Asahel W. Corner Bay and Kinnaird Streets. House and 2,162 feet of land.

Sheehan, Mrs. Mary. Franklin Street. House and about 3,917 feet of land.

Shea, John. Soden and Franklin Streets. Two houses and 4,255 feet of land.

Thresher, J. M. Jay Street, westerly side, lots 28 to 37 inclusive, containing 38,313 square feet. Howard and Kinnaird Streets, easterly side, lots 38 to 46 inclusive, 32,454 square feet; westerly side Jay and southerly side Kinnaird Street, lots 58 to 63 inclusive, 20,380 square feet; two corner lots on westerly side of Howard Street, as per new plan, near Western Avenue, 29,884 square feet. Total, 121,031 square feet.

Walsh, Patrick. 150 Green Street. House and 4,777 feet of land.

Ready, Martin. 236 Franklin Street. House and about 4,300 feet of land.

Wharves and Landings.

Public Landing, foot of Bath Street, area unknown. *Public Landing,* south of Mt. Auburn Street, area unknown.

City Wharf, Main Street, opposite Harvard Street. About 13,711 square feet.

Water-Works Property.

Old Engine House, foot of Lakeview Avenue and about 37,640 feet of land.

New Engine-House, opposite foot of Lexington Avenue, and about 43,560 feet of land.

Fresh Pond, lands bordering on, area unknown.

Little Pond, lands bordering on, area unknown.

Reservoir, Reservoir Street, corner High Street, and 84,168 feet of land.

Recapitulation of Areas.

Kind of Property.	Square Feet.	Acres.
Almshouse lands		31.558
Cemetery lands		42.591
Commons	678,787 or	15.583
City lands	313,246	
Occupied by City buildings	99,025½	
Occupied by school-houses	368,313	
Occupied by engine-houses	37,466½	
Surrendered estates: —		
Cambridge Street District	74,563	
Miller's River District	43,088	
Sparks Street District	18,842	
Cowperthwaite Street District	51,460	
Washington Street District	49,305	
Franklin Street District	459,050	
Total in all the Districts	689,408	
Occupied by Water-Works, exclusive of lands bordering on Fresh and Little Ponds	165,368	
City Wharf	13,711	

Total Areas.

Included in Almshouse, Cemetery, and Common lands		89.732
Other lands occupied by City buildings, school and engine-houses, and surrendered estates	1,693,438 or	38.899
Total acres		128.631

Respectfully submitted,

WALTER S. SWAN,
JOHN CLARY,
SILAS RHOADES,
GEO. W. RAWSON,
H. K. PARSONS,

Committee on Public Property.

REPORT

OF

THE COMMITTEE ON HEALTH.

The Standing Committee on Health at the close of its labors for the year 1877 submits its final Report.

The work of this Committee for the past year has been constant and arduous, requiring frequent hearings of petitioners asking for the reduction of assessments for low-land filling, and in some cases calling the Committee to visit premises to satisfy itself of the reasonableness of complaints made of excessive charges for such filling. This Committee has also been obliged from time to time during the year to visit different parts of the city on complaint of the maintenance of nuisances detrimental to the public health, the number of its meetings for all the duties of the Committee having been at the rate of nearly one a week through the year.

Vaccination.

The first matter to which the attention of your Committee was directed at the beginning of its duties was the matter of the vaccination of the children of indigent parentage attending the public schools.

In accordance with an order of the Board of Aldermen of 1876, adopted at the suggestion of the Board of School Committee, the order having been referred to this Committee, the following named physicians were appointed for the purpose of vaccinating such children of indigent parentage as attend the schools of this City, to wit: —

Ward 1, Dr. W. A. Winn, 26 Brattle Street.

" 2, Dr. Horace Berry, corner Elm and Broadway.

Ward 3, Dr. George A. Coburn, Sixth Street.
" 4, Dr. D. M. Edgerly, 84 Green Street.
" 5, Dr. A. D. Gay, North Avenue.

The appointments thus made were subsequently reported to and confirmed by the Board of Aldermen.

Low-land Filling.

The principal business committed to the charge of this Committee has been the consideration of petitions for abatements of assessments for low-land filling in all the districts raised to grade under the several statutes of the Commonwealth relating thereto. The most important work connected with filling was that relating to the settlement and adjustment of surrenders of estates in the Franklin Street District. The order to assess the real-estate owners in this district for the raising of their several estates to grade was adopted December 13, 1876, and during the following month notices of the surrenders of one hundred and thirty-six of these estates were duly served upon the city. These notices were referred to this Committee, and on its recommendation the same authority given to the Board of Appraisers of Surrendered Estates by the former Board of Aldermen was reaffirmed by the Board of 1877, and in connection with the aforesaid Appraisers the Committee immediately proceeded to its duties under said order. Agreeably to appointments made by the Board of Appraisers the several persons assessed for filling in the Franklin Street District met said Board at the City Hall, from time to time, and settlements were effected with a large proportion of the parties assessed, they agreeing to retain their estates previously surrendered upon terms mutually agreed upon between the Appraisers and the parties aforesaid. The adjustment of the numerous surrenders in this district was a matter of the most delicate character, requiring great patience and good judgment, and the labors of the Board of Appraisers were protracted to near the close of the year. Your Committee feels gratified at being able to state that with the valuable aid of this auxiliary Board settlements have been effected with all the owners of estates in the Franklin Street District except two: one of these cases is now in litigation, and the other, it is hoped, will be amicably adjusted without such resort. Of the whole number of one hundred and thirty-six persons who gave formal notice of the surrender of their estates, twenty-five have

since conveyed their property to the city, and have received payment therefor by Mayor's drafts, drawn upon the certificates of this Committee, as authorized by the Board of Aldermen. Three estates, the value of which has been mutually agreed upon, and the two hereinbefore referred to, alone remain unsettled, making five in all. It will be seen by the foregoing, that through the negotiations of the Board of Appraisers one hundred and six persons who had surrendered estates in this district have agreed to retain the same, thereby saving to the city an expense of many thousands of dollars which this property would otherwise have cost.

In order to effect equitable settlements with the property-holders in the district, and as an inducement for them to retain their estates, your Committee found it necessary to recommend large abatements from the assessments for filling as originally levied, as will appear in the following table: —

Amount abated on estates retained by their owners	$ 25,815.53
Amount of assessments vacated, or to be vacated on estates surrendered	91,109.20
	$ 116,924.73
Amount of assessments due	6,166.77
Amount originally assessed	$ 123,091.50

The figures given above may vary somewhat from those given in the Financial Report for the year, inasmuch as the assessments standing against the estates as yet unpaid for and in litigation remain upon the Treasurer's books as if still due and payable. When the proper order for the vacation of all such assessments shall be adopted, the Treasurer's account will then agree with the foregoing. The entire cost of the estates in this district, so far settled and paid for under the direction of this Committee, including one estate paid for in December, 1877, the cost of which goes into the expenses of the next financial year, is as follows: —

Amount actually paid for estates surrendered . .	$ 96,947.50
Amount of assessments vacated and to be vacated and all abatements	116,924.73
	$ 213,872.23

In the other low-land districts, against estates in which there were numerous unsettled claims, coming to your committee for adjustment from the unfinished work of last year, there were in the Washington Street District two estates, of which one has been settled by an agreement of parties, and the estate retained by the owner, — and the other consisting of the South Dock and South Canal so-called, it being an undivided estate, of which there were several owners, a part of whom surrendered their undivided interests in said property, which has been paid for as follows : —

$\frac{73\frac{1}{3}}{100}$	Surrendered by owners, costing. . .	$ 6,150.00
$\frac{16\frac{2}{3}}{100}$	Purchased of the owner for . . .	500.00
$\frac{90}{100}$	. . . . .	$ 6,650.00

In order to effect a sale of this estate whenever an opportunity shall occur, it would seem to be expedient that the City should at once purchase the remaining $\frac{1}{10}$, if it can be secured upon reasonable terms.

The amount of assessments vacated is	$ 9,588.11
Cost of the estate as paid for	6,650.00
Total cost to the city	$ 16,238.11

Hearings have also been accorded by this Committee to other parties in this district, on petitions for abatement of grading assessments, and for satisfactory reasons abatements and vacations have been made upon its recommendation to the amount of $ 541.51.

Your committee has also considered a large number of petitions for abatements of assessments for filling done in the Cambridge Street District, and at the urgent solicitation of petitioners, it has frequently visited various estates therein, in order to satisfy itself by personal inspection as to the merits of the several claims for a reduction of assessments. Acting with a proper regard for the interests of all concerned, your committee has recommended abatements in this district aggregating the sum of $ 2,416.57.

Two estates surrendered have also been paid for by the city, costing	$ 10,493.20
The vacated assessments thereon were . . .	482.67
Total cost	$ 10,975.87

One estate previously surrendered was retained by the owner upon vacation of the assessment for filling the same.

In the Miller's River District there were at the beginning of the year three unsettled surrendered estates. Two are as yet unadjusted : the remaining one, which had been conveyed by deed to the City, has been withdrawn, and an abatement has been made upon the assessment thereon of the sum of $ 11,298.15.

In the Cowperthwaite Street District, many petitions for abatement have been before the Committee, and abatements have been recommended to the amount of $ 2,922.65.

Two estates previously surrendered have been paid for during the year, costing	$ 7,767.00
Assessments vacated on these estates . . .	2,099.49
Total	$ 9,876.49
The abatements recommended in the Sparks Street District amount to the sum of	$ 185.48
The estates surrendered to the City by Bancroft and others in this district are still in litigation.	
The assessments upon these estates amount to . .	$ 3,001.37

Of the whole number of estates surrendered in all the districts there are claims still pending, of which the Appraisers' valuation is as follows : —

Miller's River District, two estates	$ 1,125.00
Sparks Street " one estate	15,500.00
Franklin Street " five estates	19,596.00
Total	$ 36,221.00

As has been stated hereinbefore, nearly all these are in court, and their settlement must go over into another year.

The following table exhibits the entire cost to the City of the lowland filling in all the districts, including the amounts paid to the several owners of estates surrendered, the amount of vacated assessments upon such estates, and all the abatements thus far made for various causes.

TABLE SHOWING THE ENTIRE COST OF LOW-LAND FILLING TO THE CITY OF CAMBRIDGE IN ALL THE LOW-LAND DISTRICTS, NO PART OF WHICH IS ASSESSED AND COLLECTABLE.

Name of District.	Cost of filling as originally borne by the City; streets, etc.	Abatements of Grading Assessment.	Assessments vacated on Estates surrendered.	Amount of Assessments refunded.	Cost of Estates surrendered and paid for.	Appraisers' Valuation of Estates surrendered but not paid for.
Washington Street.....	$ 72,725.71	$ 2,430.94	$ 9,995.87	$ 97.37	$ 11,573 33	
Cambridge Street	26,083.42	8,416.77	9,821.30	12.86	42,959.29	
Miller's River	622.79	42,809.47	15,365.80	.....	2,453.30	$ 1,125.00
Cowperthwaite Street	33,320.09	7,132.95	3,122.72	.....	10,136.10	
Sparks Street	11,497.47	1,240.50	3,330.47	.....	.....	15,500.00
Franklin Street.....	64,577.50	25,815.53	91,109.20	.....	96,947.50	19,596.00
Total	$ 208,826.98	$ 87,846.16	$ 132,745.36	$ 110.23	$ 164,069.52	$ 36,221.00

Recapitulation of foregoing.		Cost of the Several Districts.	
Cost of filling streets, etc., as originally borne by the City...	$ 208,826.98	Washington Street	$ 96,823.22
Abatements upon assessments levied for filling	87,846.16	Cambridge Street.....	87,293.64
Assessments vacated on estates surrendered	132,745.36	Miller's River.....	62,376.36
Amount of assessments paid and afterwards refunded	110.23	Cowperthwaite Street	53,711.86
Amount paid for estates surrendered to the City	164,069.52	Sparks Street	31,568.44
Appraisers' valuation of estates surrendered but not paid for .	36,221.00	Franklin Street	298,045.73
Total cost of filling including all the above items	$ 629,819.25		$ 629,819.25

From the assessments as originally levied abatements have been made for satisfactory reasons, and vacations made or are to be made on amounts assessed on surrendered estates, as follows : —

District.	Originally assessed.	Assessments vacated and abated.	Bal. of assessments after deducting abatements.
Washington Street	$ 77,468.31	$ 12,524.18	$ 64,944.13
Cambridge Street	31,037.60	18,250.93	12,786.67
Miller's River	94,298.54	58,175.27	36,123.27
Cowperthwaite Street	16,575.74	10,255.67	6,320.07
Sparks Street	8,441.28	4,570.97	3,870.31
Franklin Street	123,091.50	116,924.73	6,166.77
	$ 350,912.97	$ 220,701.75	$ 130,211.22

Recapitulation of Foregoing.

Amount originally assessed	$ 350,912.97
Abatements and vacations	220,701.75
Balance of amount assessed	$ 130,211.22

General Recapitulation.

Net cost of filling to the City, no part of which amount is assessed upon individuals, including also the amount paid and to be paid for all estates surrendered on account of low-land filling . . .	$ 629,819.25
Add amount of assessments from which all abatements and vacations have been made	130,211.22
Total *gross* cost of filling in all the districts . .	$ 760,030.47

The foregoing abatements and vacations are included in the table upon the preceding page.

The figures given in this Report comprehend the entire work of the Committee to the close of the municipal year, ending December 31, 1877, and therefore may vary somewhat from the Financial Report, which is made up to November 30, the close of the fiscal year.

Throughout all the numerous hearings which have been given by your Committee in regard to the one hundred and sixty-three matters which have been referred to its decision, the most careful attention has been given to every claim made for abatement. Cases of great hardship have been frequently presented at these meetings, more particularly as relating to assessments in the Cam-

bridge Street District. Testimony has been introduced showing that in some instances cellars charged as being filled were not so filled, the gravel being deposited upon the surface above ground, if deposited at all. In two instances filling was done over the boundary line in Somerville, and the filling charged for to the owner of the estates. In this district it has appeared in evidence that the general result of the filling has been the impoverishment of the property-owners, and the Committee has felt it due to these citizens as a matter of equity to lift the burden bearing so heavily upon them, as far as possible, consistently with the public welfare. There were many cases so exigent that the utter enforcement of the claims of the City would only have resulted in the ultimate pauperism of the debtor.

Your Committee hoped to bring to a satisfactory conclusion all the matters placed in its charge during the year, but it is obliged to refer a few only to the incoming Board of Aldermen.

The important services rendered by the Board of Appraisers of Surrendered Estates, Messrs. Charles H. Saunders, Samuel Slocomb, and Samuel Sanders, in the valuation of estates surrendered and the adjustment of the same with the several owners, cannot be overestimated. By their judicious counsel many thousands of dollars were saved to the City through the withdrawal by the owners of estates which had been surrendered. The reports of this Board, made from time to time during the year to your Committee and subsequently communicated to the Board of Aldermen, show that the Appraisers have exercised the delicate and responsible powers committed to them with a sagacity and regard for the interests of the City which fully justifies their appointment.

The acceptance by the voters of our City at the recent election of the Act of the last Legislature in reference to Boards of Health in Cities will relieve the next City Council of much of the work relating to the abatement of nuisances, which has heretofore been in charge of the Committee on Health. It is also to be hoped that the remaining duties in the department of this Committee may be far lighter than heretofore.

All of which is respectfully submitted.

DANIEL H. THURSTON,
JAMES A. FOX,
CHARLES W. MUNROE,
Committee on Health.

REPORT

OF THE

COMMISSIONERS OF THE CAMBRIDGE CEMETERY.

THE Commissioners of the Cambridge Cemetery herewith respectfully submit their Twenty-Third Annual Report for the year ending November 30, 1877.

The receipts for the year have been as follows: —

Cash received for burial-lots	$ 7,226.85
" " " care of lots	2,168.62
" " " burial-fees	1,606.25
" " " foundations	394.38
" " " brick graves	58.00
" " " granite posts	636.00
" " " hay	91.62
" " " wood	8.50
" " " top dressing	104.00
" " " interest on perpetuated lots	125.85
Total receipts	$ 12,420.07

The expenditures for the year have been as follows: —

Superintendent's salary	$ 1,500.00
Sundry workmen	5,921.24
Bell	27.09
Bricks	18.00
Clothing for two men to wait upon funerals	24.15
Car-tickets	20.00
Canvas coverings	22.50
Amount carried forward	$ 7,532.98

Amount brought forward	$ 7,532.98
Fuel	52.54
Grave-covers and belting	29.56
Hardware, tools, etc.	51.33
Hose	67.60
Expense of introducing water	863.92
Lumber and cement	40.42
Printing	23.25
Plants	236.50
Repairs of office, fence, etc.	259.44
Repairs	26.60
Resetting curbings	150.00
Sign-posts	220.50
Stone posts	220.78
Ledge-stone, sods, manure, and loam	723.10
Tablets for soldiers	78.00
Incidental expenses	64.26
	$ 10,640.78

The receipts for burial-lots have amounted to $ 7,226.85, being $ 1,543.15 less than the average annual receipts for the last five years; but by reducing the expenses to the lowest point consistent with a proper care of the grounds, the receipts show an excess over the expenditures of $ 1,779.27.

There has been deposited with the City Treasurer, by owners of lots, for the care of the same, in accordance with an ordinance passed October 16, 1872, the sum of $ 1,250, the interest upon which, amounting to $ 125.85, has been expended under the provisions of said ordinance.

Many lots, for which no such provision is made, are entirely neglected by the owners, and present an unsightly appearance, which interferes with the otherwise uniform beauty of the grounds. It is to be hoped that this fund may be largely increased in the future.

The number of lots prepared and now for sale is 64.

Number of lots sold during the year, 71.

There have been 462 interments during the year, — being 43 less than in 1876, and making the whole number of interments in the Cemetery 9,906.

At the request of the Commissioners the Cambridge Water Board

has extended water-pipes through Coolidge Avenue to the Cemetery, and 1,638 feet of supply-pipes have been laid in the grounds, with hydrants at suitable distances, a meter being attached to measure the water consumed. By the use of hand-hose two men can now water the grass and flower-beds more thoroughly, and at much less expense, than was possible under the system heretofore employed. The improvement thus made in the appearance of the grounds has been so marked, that the Commissioners recommend, as a matter of economy, a yearly extension of the supply-pipes until all parts of the Cemetery can be reached.

The Superintendent is commended for the faithful attention and judicious care which he has continually exhibited in the performance of his duties.

FRANK A. ALLEN,
GEORGE R. BRINE,
GEO. S. SAUNDERS,
CURTIS DAVIS,
WILLIAM PAGE,
JOHN M. TYLER,
GEO. T. GALE,
} *Commissioners.*

REPORT

OF THE

COMMITTEE ON SOLDIERS AND THEIR FAMILIES.

THE Joint Committee on Soldiers and their Families has the honor to submit the following, its Report for the year ending November 30, 1877:—

Cases in which aid has been granted during the year .	283
Number now on the list	257
The appropriation for volunteers and their families was	$20,000.00
The amount paid from which to November 30, as appears by the books of the Auditor, was . .	19,249.00

The payments of State Aid for the year ending December 31, 1877, amount to $18,259.75, of which amount the City claims $15,568.25 as reimbursement from the Commonwealth. The payments for the month of December amount to $1,446.25, and an appropriation of $18,000.00 will be sufficient for the ensuing year.

It having been ascertained that for many years the Auditor of the Commonwealth had only partially audited the accounts of the City of Cambridge of moneys paid for State Aid to Soldiers and their Families, and that the Commonwealth's Treasurer had retained from year to year sums which the Auditor judged ample to cover all amounts which the City *might* have illegally paid, as well as whatever was properly paid to those in necessitous circumstances, but which could not be recovered from the Commonwealth; and it being believed that if these accounts were properly and carefully audited a large sum of money would be found due to the City, early in the year an

order was introduced into and passed by the City Council as follows: —

"That the Committee on Soldiers and their Families be instructed to consider by what method the accounts of the City of Cambridge with the Commonwealth of Massachusetts for State Aid may be closed, to the end that the City may receive any sums of money that may be due to it on claims now unsettled on account of insufficient evidence or for any other reason." In obedience to this order, the chairman of the Committee spent considerable time in the examination of the accounts at the State House, and in consultation with the Auditor in respect thereto, and from his books prepared a table showing the amount of money deducted from the City's account, the amount claimed of the State by the City, the amount paid the City by the State, and the balance between the amount paid by the State and the amount claimed by the City for each year from the year 1864 to the year 1876; those being all the years which had been audited, and the accounts of which were understood to be still open. As a result of this preliminary research, he prepared for the Committee a report to the City Council upon the subject, which it adopted, and which was as follows: —

"The Committee on Soldiers and their Families having considered the order referred to them in relation to the closing of the accounts of the City for State Aid with the Commonwealth, and having made partial examination of those accounts now on file at the State House, report that they find, since the year 1864, there has been no settlement with the Commonwealth of the accounts of moneys expended by the City for State Aid; from that time up to the year 1876 the City has paid the sum of $250,136.95 to applicants, and has received on account of the same the sum of $231,275.10; that the Auditor of the Commonwealth has deducted during those years intervening the sum of $18,263.79, as money paid by the City which cannot be claimed from the Treasury of the Commonwealth; and that the Treasurer has retained the amount of $598.09 above the amount of the deductions, all of which will more particularly appear in the annexed table, which we have prepared from the accounts of the several years on file at the office of said Auditor. The account for the year 1876 has not been audited, no appropriation having been yet made by the Legislature to pay cities and towns money expended by them for such purpose during that year: it also being

not the custom to audit such accounts until the close of the year. Many of the deductions made by the said Auditor are on account of lack of evidence of certain requirements which if supplied (as they even now may be) will restore the sums deducted to the City Treasury. In order to supply this evidence, each account so deducted throughout the entire twelve years, with its accompanying application now on file in the Auditor's office, will have to be carefully examined, the evidence desired ascertained, the parties who have received the aid sought out, and new applications prepared, sworn to, and filed. This work will require considerable time and the services of an expert; but your Committee believes that it will be profitable to the City to have these accounts so far as possible rectified and closed, and to that end recommends the passage of the accompanying order."

Accompanying this report was the following order, which was passed by both branches, viz.: —

"*Ordered*, That the Committee on Soldiers and their Families, be instructed to employ a suitable person or persons, at an expense not to exceed the sum of four hundred dollars, who shall under its direction examine, rectify, and close the accounts of the City with the Commonwealth relating to State Aid paid by said City since the year 1864." The table which was made a part of the report of the committee is hereto annexed.

Year.	Deduction.	Amount claimed by City.	Amount paid by the State.	Balance between amount paid by the State and amount claimed by the City.
1865	$1,502.77	$39,460.07	$37,000.00	$2,460.07
1866	458.67	29,766.19	26,000.00	3,766.19
1867	843.71	23,887.47	22,000.00	1,887.47
1868	952.73	18,625.10	18,625.10	
1869	1,202.87	19,584.15	19,000.00	584.15
1870	1,593.34	20,065.75	20,000.00	65.75
1871	1,812.28	20,486.50	20,000.00	486.50
1872	1,752.73	20,114.25	20,000.00	114.25
1873	1,786.72	19,897.50	16,650.00	3,247.50
1874	3,161.47	19,668.00	16,000.00	3,668.00
1875	3,196.50	18,582.00	16,000.00	2,582.00
	$18,263.79	$250,136.95	$231,275.10	$18,861.88

Under the power and instruction contained in the above order the Committee employed Mr. E. W. Law, whom it considers a suitable

person to do the required work, and he has entered upon and is still diligently employed in his duties in connection therewith. It was hoped that with the aid of Mr. Law the Committee would be able to close these accounts during the present year; but such has proved impossible, the greatest hindrance being the difficulty in procuring records of enlistments and discharges of soldiers of other States, and of sailors in the service of the United States. The work however is almost concluded, and it only remains to receive from the Department at Washington answers to letters already written, for the City to be in a position to claim of the Auditor of the Commonwealth his approval of a large number of cases paid by the City at present disallowed by him; which approval will put a considerable amount of money into our treasury.

The Committee would further say, that since entering upon this work it has found reason to believe that the City may claim balances for years prior to 1865, which will swell the sum. In conclusion, it would recommend that the incoming City Council continue this work, which is now so near its close, and that in its prosecution and completion it retain the services of the gentleman who has, as an expert, carried it forward to its present position, believing that he has acquired knowledge by his labors which makes him better qualified and more valuable to the City than would be any new individual in the same employment.

All of which is respectfully submitted.

CHAS. J. McINTIRE,
JAMES A. FOX,
JOSEPH W. SMITH,
JAMES H. SNOW,
EDWARD H. WHITNEY,
HENRY K. PARSONS,
HENRY A. DOHERTY,

Committee on Soldiers and their Families.

REPORT

OF

THE BOARD OF OVERSEERS OF THE POOR.

THE Overseers of the Poor respectfully present their Annual Report for the financial year ending November 30, 1877.

The Act creating and governing the Board went into effect on the seventh day of May; and, therefore, it becomes necessary to rely upon the record of the former Board for expenditures previous to that date during the past financial year.

At the meeting for organization on the above date the Board made choice of a Secretary to take charge of the central office, and render aid under the direction of the Overseers of the Poor.

At a subsequent meeting a visitor was chosen to investigate all applications, and ascertain, not only the facts of settlement, but also the necessities of the applicants.

The Appropriation for the Almshouse, care of the poor, and collection of house offal, for the year was		$75,000.00
The expenditures have been		
December, 1876	$5,662.11	
January, 1877	6,604.26	
February, "	9,493.28	
March, "	7,141.01	
April, "	10,360.96	
May, "	6,617.34	
June, "	5,683.91	
July, "	3,619.27	
August, "	3,909.27	
September, "	3,355.19	
October, "	5,176.61	
November, "	3,071.62	$70,694.83
Balance unexpended		$4,305.17

Almshouse Department.

Expenditures.

Groceries, meats, and fish	$ 9,866.03	
Dry-goods, clothing, boots and shoes, fuel, gas and water	5,021.77	
Repairs on buildings, hardware, and farming tools	987.56	
Grain and hay for horses and cows	1,925.38	
Carriage-work, harness-repairing, and horse-shoeing	587.78	
Medicines	292.23	
Bread	2,255.93	
Furniture, wares, and fixtures	308.50	
Manure for farm	351.50	
Stationery, car-tickets, and postage	20.61	
Salaries, help, and expressing	5,511.22	
Paid for labor, powder, and tools	656.53	
Total expenses for Almshouse and Workhouse		$ 27,976.04

Receipts.

For products sold from the farm	$ 399.41	
From sales of sand	81.90	
From sales of stone	947.42	
From relatives of persons boarded at the Almshouse	97.50	
From Cambridge Gas Light Co. for error in bill	58.00	
Total receipts		$ 1,584.23
Amount of expenses above receipts		$ 26,391.81

Outside Aid Department.

Expenditures.

For support of paupers at various State institutions: —		
Insane	$ 5,760.34	
Criminal	790.73	
For burial of paupers outside of the Almshouse	849.50	
Amount carried forward	$ 7,400.57	

Amount brought forward . .	$7,400.57	
Bills paid other cities and towns for paupers having settlements in Cambridge	4,664.60	
Clerk's and Secretary's salary . . .	775.99	
Paid for Visitor's services . . .	924.34	
Fitting office	93.75	
Furniture	68.95	
Printing, and new books for office . .	286.57	
Clerical services, stationery, postage, car-tickets	577.84	
Driver of supply-wagon for Overseers of the Poor	101.50	
Groceries, fuel, boots and shoes .	19,711.82	
Rents, medicines, physicians' bills .	1,413.61	
Transportation of paupers to Tewksbury and elsewhere	62.25	
Total cost of outside aid		$36,081.79

Receipts.

From other cities and towns for support and burial	$6,351.29	
From the State for support and burial of State paupers	1,048.01	
Total receipts		$7,399.30
Net expenses above receipts . . .		$28,682.49

House Offal Department.

Expenses.

Pay-roll of men employed . . .	$4,549.00	
Board of six horses	1,092.00	
Cash paid for two horses . . .	600.00	
Sundry implements	30.00	
Shoeing, repairs on wagons . . .	366.00	
		$6,637.00

Receipts.

Received from sales of house offal	$4,486.61
Cost to the City for collecting . . .	$2,150.39

Recapitulation.

Whole amount expended for Almshouse, care of the poor, and collection of house offal . . .		$ 70,694.83
Deduct cost of collecting house offal . . .		6,637.00
Total expenses of Almshouse, Workhouse, and care of the poor		$ 64,057.83
Deduct receipts other than amounts received for house offal		8,983.53
Net cost to the City for support of the poor .		$ 55,074.30
The net cost to the City for support of the poor in 1876 was . . .	$ 73,941.57	
Showing a reduction for the present year of . .		$18,867.27

Thus, by the foregoing statement it is shown that the cost to the City for the support of the poor is $ 18,867.27 less for the year just closed than for the previous year.

This reduction of expense is chiefly owing to the new system adopted by the Board of Overseers elected under the recent Act of the Legislature, whereby the actual condition of all persons applying for aid is ascertained by a visitor of the Board appointed for that purpose, and a careful inquiry made into their circumstances, their antecedents, prospects, and their claim which entitles them to aid by the law of settlement.

The determination of the question of settlement requires a careful examination of tax-lists here, and perhaps elsewhere, oftentimes entailing inquiries into genealogies and the settlement of ancestors of persons seeking aid.

This labor, which has been faithfully performed by the officers appointed, has resulted, in a large degree, to the pecuniary relief of the City without doing injustice to the deserving poor whom we are bound to aid, and whom we may lawfully support.

Complete records have been taken, and are now on file at the office of the Board, showing the histories of 827 applicants for relief, representing by their families 2,499 persons, who have claimed assistance or support during the past year, and the most of whom have heretofore received aid from the City. The records show that of this number, 1,486, or about three fifths of the whole, have no

legal settlement here, and the City is not liable for their support.

For the accommodation of applicants, and for convenience in the performance of their duties, the Overseers established an office in the new City building in Central Square, where the officers of the Board may be found during the day, to receive all applications for aid, to take the history of the applicants, and perform all business pertaining to the duties of this Department.

In submitting their Report, the Board are unanimous in the opinion that the new system is working to the advantage of the poor as well as the City.

The Reports of the Warden and Almshouse Physician are hereto appended.

Respectfully submitted,

FRANK A. ALLEN,
EZRA PARMENTER,
GEO. D. CHAMBERLAIN,
J. C. WELLINGTON,
SUMNER ALBEE,
CHAS. E. VAUGHAN,
} *Overseers of the Poor.*

REPORT

OF

THE WARDEN OF THE ALMSHOUSE.

To the Board of Overseers of the Poor.

Gentlemen, — I have the honor to present the following Annual Report of the institution for the year ending November 30, 1877.

The whole number of persons received during the year ending November 30, 1877		185
Number on Overseers' permit	150	
Number on Court sentence	35	
Total number of inmates, November 30, 1877		130
Males	72	
Females	58	
Adults	72	
Minors	58	
Number of children attending school, November 30, 1877		45
Boys	35	
Girls	10	
Truants	13	
Paupers	32	
Number of inmates at the Almshouse, November 30, 1876		206
Males	136	
Females	70	
Adults	112	
Minors	94	

Number of children attending school, November 30, 1876		78
Boys	57	
Girls	21	
Truants	25	
Paupers	53	
Estimated cost of each inmate, per week, for food and clothing	$1.93	

The number of deaths for the year ending November 30, 1877, was 8; being 12 less than in 1876. The ages of those who died were as follows: 25, 50, 76, 45, 60, 64, 64, 1 month. The deaths were chiefly the result of chronic disease of long standing, and in all cases contracted previous to the patient's becoming an inmate of the house. There has been no epidemic or contagious disease during the year, except a mild form of diphtheria. I can with much pleasure testify to the promptness and efficiency of the House Physician, James R. Morse, M. D.

The sanitary condition of the house and its surroundings is good, having been much improved during the past two years by additional drainage.

The educational department is conducted by two experienced teachers, Miss Jennie A. Norris and Miss Harriet A. Butler, who are indefatigable in their efforts; and I am pleased to say their labor is not in vain, as the school will compare favorably with those outside.

The following have been the products of the farm during the past year, with the estimated value of the same: —

1,200 bushels potatoes	$840.00
85 bushels beets	51.00
30 bushels onions	60.00
150 bushels tomatoes	75.00
100 bushels green peas	50.00
100 bushels green beans	50.00
56 bushels rye	56.00
140 bushels turnips	112.00
Amount carried forward	$1,294.00

	Amount brought forward	$1,294.00
6	tons mangel-wurzels	84.00
20	tons hay	500.00
10	tons straw	250.00
2,500	heads of cabbage	150.00
50	barrels green corn	50.00
1,000	bunches asparagus	150.00
		$2,478.00

I would respectfully suggest the expediency of making a change in the internal arrangements of the house, in order to provide better accommodations for the sick. The rooms now used for hospital purposes are entirely inadequate, the ventilation is very defective, and there is no way of improving it in the present quarters.

I would also recommend that the Act whereby the Almshouse was made a workhouse be so amended as to apply only to those having a legal settlement in Cambridge.

During the past year I have endeavored to do my whole duty both to the unfortunate people under my charge and to the community generally, and if in so doing I merit the approbation of the gentlemen of the Board of Overseers, I am well compensated for my trouble and anxiety.

I remain, gentlemen, your obt. serv't,

WM. E. HOUGH,
Warden.

CAMBRIDGE ALMSHOUSE, November 30, 1877.

REPORT

OF

THE VISITING PHYSICIAN.

To the Overseers of the Poor of the City of Cambridge.

Gentlemen, — In the care of the sick and feeble inmates of the Cambridge Almshouse during the present municipal year, I have found that the duties which I have been called upon to discharge have been very similar to those of previous years. It may, however, be proper, at the outset, to suggest that the change in the system of management of this institution of charity adopted by your Board has produced many good results, — one of the most important of which is, that the number of inmates who receive the charities of the City has been largely reduced, especially so of that class who are regarded as the healthy and able-bodied (except when suffering from attacks of acute disease). The natural result, therefore, of said change is, that the number of cases of active sickness from acute disease has been less the present year than during the past one or two years, when the whole number at the house was much larger than at the present time.

But the number of that class of inmates who find their permanent home in the hospital department of the institution seems quite as large the present year as in former years; the most important reason why the rooms used for hospital purposes seem to continue filled is, that it is the legitimate result of the system which has been adopted, which is to send as large a proportion as possible of the sick poor of the City to this institution, where the facilities for securing comfort and if possible improved health to those who are suffering from long protracted sickness are much better than can be secured in the homes of those who are the proper recipients of

this noble charity. It is therefore evident that a larger proportion than usual of this class have, during the current year, been sent to the house for care and treatment; also, that those now there who had been sent to the house previously were doubtless of the class who could not be removed without difficulty or even danger.

Your Board will permit me to state that the rooms used for hospital purposes have at times proved inadequate to accommodate the sick; and they are not well adapted to secure to the inmates all the sanitary advantages which would contribute to the greater comfort and improved health of those who would be greatly benefited by a more perfect ventilation and a better arrangement of the rooms. I have, during the present year, deemed it advisable to visit the inmates of the house as frequently as in former years, and have uniformly found some at each visit that seemed to be in need of advice or medicine. I have also visited about the usual variety of cases of acute disease, having found in this class of cases lung fever the most common. During the last winter there were four cases of diphtheria sent to the house for treatment, and for the purpose of protecting the other inmates these cases were kindly and promptly provided by your faithful and efficient Warden with rooms at the hospital building for contagious and infectious diseases. These cases, coming from a district where the disease prevailed, seemed for a few days severe and critical; but they all fully recovered without any unfavorable effects from the disease. Also, four cases of fever of a typhoid type occurred among the aged inmates, all of whom seemed in better health after their recovery than previous to their sickness. The whole number of foundlings received at the house during the year was eight, all of whom were kindly and tenderly cared for by the Matron and her assistants until removed to some other institution of charity. The number upon the sick-list among the cases of protracted sickness has been nearly uniform during the year, and where the recovery of health cannot be secured, the comfort of the suffering and permanently disabled is regarded as very desirable. It has been my rule to make daily visits to the house at all times when there was any sickness to render it desirable, having learned that frequent visits serve to prevent suffering, and sometimes save the inmates from sickness. There has no case of acute disease proved fatal the present year, but among the large number treated for chronic diseases there have been eight that proved fatal,

as follows: from consumption, four; from cancer, one; from pyemia, one; from Bright's disease, one; also one case of a child subject to convulsions. One case of confinement has occurred at the house during the year.

It affords me great pleasure to report that in the discharge of my duties the most friendly feeling has been uniformly manifested on the part of the inmates, who appear grateful for the kindness which they receive. I have also, at all times, received the kindly aid and sympathy of the Warden and Matron and all their assistants, which has rendered a faithful discharge of all my duties the more pleasant, as well as more efficient in securing to the suffering inmates the largest amount of comfort and happiness which their circumstances will permit.

I also desire to renew the expression of my gratitude to you, gentlemen, for your continued confidence, and for the manifestations of personal and official kindness which I have received at your hands.

Respectfully submitted,

J. R. MORSE.

CAMBRIDGE, November 30, 1877.

ANNUAL REPORT

OF THE

CHIEF ENGINEER OF THE CAMBRIDGE FIRE DEPARTMENT,

For the Year ending November 30, 1877.

Chief Engineer's Office, City Hall,
Cambridge, Nov. 30, 1877.

To the Honorable Mayor and the City Council of Cambridge.

Gentlemen, — According to custom and in pursuance of Section 6 of the Ordinance in relation to the Fire Department, I herewith respectfully submit my Seventh Annual Report of the Steam Fire Department of Cambridge.

The Report, though brief, will be found to contain a list of members of the force, a description of the fire apparatus in use, and an account of losses by fire during the year ending November 30, 1877, with the amount of insurance on property damaged, as near as could be ascertained.

Membership.

The number of members of the Department has been reduced since the last Report, an Ordinance limiting the membership having been passed by your Honorable Boards May 3, 1876.

Under this new Ordinance each steamer company is entitled to twelve members, instead of fourteen, and each hook-and-ladder company is entitled to seventeen members, instead of twenty-one. With this reduction the force now numbers one hundred and three men, rated as follows: —

One Chief Engineer, four Assistant Engineers, twelve members of each steamer company, seventeen members of each hook-and-

ladder company, a Relief Engineer, a driver of Supply-Hose Carriage No. 1, a Telegraph Operator, and an Assistant Operator.

The reduction of the force has worked no detriment to the service, but it has effected a saving in compensation of $3,600 per annum.

Financial Statement.

As a great deal has been said in relation to the increased cost of maintaining this Department, an explanation may be appropriate at this time. This Department, like all others connected with the City, has been gradually enlarged from year to year as the public needs have required. This has been done by the City Council when found to be necessary, and not by an individual, as some have been led to suppose.

In 1870 the Department consisted of four steamer companies and one truck company, and the total of expenses for that year, including compensation, was $41,595.40.

In 1871 the expense of the Department was $44,948.73. The increase of expenditures for that year was owing in part to an increase of compensation, the purchase of additional hose and fire-alarm boxes, and the expense attending the making of needed repairs to the apparatus.

In 1872 the expenditures amounted to $42,373.56, which included compensation, $22,500; new steam fire-engine No. 3, new hose-carriages, and new hose, $8,919.

In 1873 large expenditures were made by vote of the City Council, the aggregate amount being $59,452.55.

Of the amount expended in that year, $4.250 were for a new steam fire-engine, $1,000 for fire-alarm boxes, $4,860 for new hose, $700 for new fuel-wagons, an increase of compensation amounting to $9,124.24, and a part of cost of new building for Truck Company No. 2, amounting to $1,400.

During the year 1874 the expenditures reached the large sum of $97,355.90.

This apparently remarkable outlay was caused to a great extent by the remodelling of engine-houses at a cost of $13,629.43, and the erection of Engine House No. 5, and the purchase of land therefor at an expense of $11,300.

To the above amounts may be added the sum of $4,250 for new steam fire-engine No. 2; $1,875 for new truck No. 2; $1,000

for fire-alarm boxes; $2,391.65 for tower, bell, and striker, Webste school-house; $37,814.49 for compensation; and $2,200 for new horses. All of the above items of expenditure were made by vote of the City Council.

In 1875 a large reduction of the expenditures was made as compared with the outlay of the previous year. The principal item of expenditure in 1875 was that of compensation, $44,533.04. The item of new hose and repairs represented a sum of $7,607.62, and that of tower and bell, Putnam school-house, $966,56. The other principal items of expenditure were those for furniture, $3,791.50, and heating apparatus, $3,340.23.

The cost of the Department in 1876 was $77,417.21, which sum was aggregated by the addition of the following amounts: —

Compensation of members, $44,173.23; water-rates for hydrants and engine-house supplies, $6,463; new steam fire-engine No. 5, $4,250; fire-alarm boxes, $500; hay and grain, $3,087.85; fuel and gas, $3,273.06; repairs and materials, $4,296.46, etc., etc.

The expenditures for 1877 are hereto annexed, showing more in detail the items for which the appropriation has been expended. They are as follows: —

Services of members, including salaries of Engineers	$38,902.63
Water-rates for hydrants, reservoirs, and house supplies	6,721.00
New hose and repairs	3,542.50
Hay, grain, and straw	2,942.23
Repairs of fire apparatus	2,226.34
Gas at houses	1,912.40
Extra horses and men	1,717.64
Alterations in Hook and Ladder House No. 2, and plans	1,442.50
Engine-house repairs	1,146.45
House and engine fuel	1,114.18
Vitriol and zinc	805.43
Horses	600.00
Labor on telegraph and care of hydrants	560.12
Horse-shoeing	520.94
Amount carried forward	$64,154.36

Amount brought forward		$ 64,154.36
Fire-alarm boxes		500.00
Vacation substitutes		490.50
Washing for engine-houses and battery-station		453.81
Veterinary services and medicine		352.50
Oils and hose dressing		295.94
Fines of members		288.00
Harnesses and repairs		272.42
Miscellaneous expenses		1,705.13
		$ 68,512.66
Appropriation	$ 65,500.00	
Additional appropriation	3,025.00	$ 68,525.00
Amount of expenses		68,512.66
Balance unexpended		$ 12.34

The Fire Apparatus and Equipments.

The several steamers employed in the service are all in excellent condition, excepting No. 1, which has required frequent repairs during the year.

This steamer has been in constant use since the fall of 1864, at which time it was put in service. It is a single-pump engine of the earliest style of construction, and it is not therefore a piece of machinery which will compare favorably with the improved patterns now followed by its builders.

It is a question whether it would not be more economical to displace this steamer by introducing one of greater power than to meet the expense of needed repairs from time to time.

The Department is in possession of two old steamers, which have been used for relief or extra purposes.

Old No. 3 is not in a condition, owing to her defective boiler, to be used with safety. Old No. 5 is in pretty fair condition, and often finds employment at times when it is necessary to make repairs on other engines.

A small outlay would place this engine in first-rate order. Old No. 3 could be made equally as serviceable by expending a few hundred dollars for a new boiler, and for duplicate portions of the running machinery.

An outlay of this kind would be money well spent, for it would give to the service two spare pieces of apparatus.

Both hook-and-ladder trucks are in good order, as are also hose-carriages Nos. 1, 2, and 4. Hose-carriage No. 3 is not in good condition, the frequent repairs upon it not seeming to improve it. Hose carriage No. 5 is of the two-wheel pattern, and is unsuited for the use to which it is put. The same may also be said of supply-hose carriage No. 1. I have heretofore recommended a change of these two latter-named carriages for vehicles having four wheels. I would renew my recommendations for the purchase of four-wheeled carriages.

Department Hose.

The condition of a large portion of the Department hose caused a thorough examination of it to be made during the past summer, and every foot of it was put to a severe test for the purpose of detecting weakness. A considerable amount was found untrustworthy for fire service, owing to its long use in the Department. That portion which showed weakness under a light water pressure was discarded, and all which withstood a certain pressure was retained.

To reinforce that which had been retained, four thousand feet of cotton hose, rubber lined, was purchased, and equally distributed to the several steamer companies. The hose purchased is believed to be a good article, as it is now quite well established that manuturers have at last produced textile fabrics which are capable of withstanding high water pressures and ordinary wear and tear.

For many years leather hose was the only article which could be depended upon for strength and durability.

That was at a time when the dressing of leather was effected without the aid of chemical compounds which now find favor with tanners and leather-dressers. This new process of tanning tends to the destruction of vitality and strength, and hence it is almost impossible to procure an article of leather like that which years ago found favor with the managers of fire departments.

The new quality of hose just purchased is finding favor with those who handle it, since it combines lightness and a freedom from greasy substances.

All cotton hose requires proper care after use, by being thoroughly dried, to prevent mildew and rot. This attention will be carefully given it in this Department.

I would recommend the purchase of an additional quantity of cotton hose, of the best manufacture, whenever the leather hose exhibits defects.

Fires and Alarms.

It is a source of gratification to be able to report to your Honorable Boards the small loss by fire during the year ending November 30, 1877.

This exemption from great losses is pleasing to contemplate, when it is so well known that our city is built almost entirely of wood.

Fires have occurred in closely built neighborhoods, but they have not been allowed to make much headway; the early arrival of the firemen and apparatus preventing a spread of the flames.

Manufacturing buildings filled with combustible materials have caught fire, but the firemen have succeeded in saving them with comparatively small loss.

The principal fire of the year occurred on the premises of Messrs. Pettingill & Sawyer, Thorndike Street, August 7, where a loss amounting to $30,000 was sustained.

The buildings burned were well on fire before the alarm was given; the inflammable materials used in the manufacture of oil clothing making the fire burn furiously, and sending out an intense heat which threatened the destruction of adjacent property. The efforts of the firemen were put to a severe test to prevent the spread of the fire, the property burned being situated in the midst of factories, dwellings, and stables.

The large wooden building on the premises of Messrs. Allen & Endicott, Main Street, occupied by the Walworth Manufacturing Company for the storage of patterns, was destroyed by fire June 23, involving a loss estimated at over $12,000.

At this fire several firemen received slight injuries by the falling of a portion of the building, an account of which is given elsewhere.

The large Picture Moulding Manufactory of Messrs. George A. Denham & Co., Thorndike Street, was damaged by fire March 11, to the estimated extent of $12,000.

In these several cases the insurance on the property destroyed is reported as not having covered the losses sustained.

The whole number of alarms for all causes for the year ending November 30, was 84.

Additional Extinguishing Apparatus.

I availed myself of the opportunity in my last Report to call your attention to the need of adding another engine to the service, with a location in Ward Four. The matter is, in my opinion, one of great importance, and is worthy of your consideration. I may be pardoned if at this time I quote from my Report of last year the following, having reference to the subject: —

"The rapidly growing district known as the Fourth Ward is not so fully protected against fire as its needs demand; and I would recommend to your consideration the practicability of adding another steam fire-engine to the service, with a location midway in that portion of the ward bounded by Main and Brookline Streets, Putnam Avenue, and the river. The large manufacturing establishments known as the Riverside Printing Press and Dover Stamping Works, the large soap-factories, book-binderies, and other business interests, require more certain protection than is now afforded. The distances from Engine Houses Nos. 1, 2, and 5 to the Riverside Press (Box 42), by actual measurements, and by the nearest routes, are respectively as follows: —

"From Engine House No. 1, Brattle Square, through Mount Auburn Street, Putnam Avenue, and Western Avenue, to Riverside Press (Box 42), the distance is 5,250 feet, or $\frac{994}{1000}$ of a mile.

"The distance from Engine House No. 2, through Main and River Streets, to the same point, is 5,500 feet, or one mile and $\frac{41}{1000}$.

"From Engine House No. 5, through Hampshire, Prospect, and River Streets, to Riverside Press, the distance is 6,750 feet, or one mile $\frac{278}{1000}$.

"To respond to an alarm given at Box 42 from either of the above-named stations would require, on an average, from eight to ten minutes of time, — a condition not existing in any other part of the city where manufacturing is carried on, and where the greater liabilities exist.

"The subject is one which the citizens of the ward are interested in, and I trust that it will receive the consideration it merits."

Fire-Alarm Telegraph.

This branch of the service has continued to prove its great value, and it cannot be too highly prized.

Mr. George J. Blaisdell, the operator, and Mr. David J. Campbell, his assistant, have been untiring in their care of the system with its multifarious requirements. Two additional street signal-boxes, Nos. 29 and 61, have been connected with the service, and also extra jars of battery since the last Report. The line wires require frequent

changes and repairs, and on several occasions have had to be cut to allow the moving of buildings through the public streets, a practice which it would seem should be discontinued.

Besides the mutilation of trees in the streets and the hindrance to public travel, it is necessary at times to separate the telegraph wires where they cross the streets.

A recent occasion required the cutting of two circuits, which were rendered inoperative for nearly half an hour.

Two important sections of the city manufacturing districts were thus left exposed with no means of transmitting an alarm, had a fire broken out.

The risk to the public in a practice of this kind is altogether too great when compared with the accommodation it affords the individual.

The telegraph system is now more than double what it was when originally introduced in 1869, and the cost of maintaining it is correspondingly greater. No objection should be urged against the extension of this valuable auxiliary, for all parts of the city should be equally well protected by the introduction of signal-boxes.

I would recommend the purchase of two or more boxes the coming year, and would renew previous recommendations to have a bell and striker placed in the tower of Engine House No. 5.

The Battery Room is a well-appointed apartment, second to no other in the country, and contains three hundred and eighty-five jars of battery, and such implements and machinery as are requisite for the uses to which they are put. Connected with the service are five bell-strikers, which strike public alarms when boxes are pulled. There are also sixty street signal-boxes, nine engine-house gongs, nine engineers' and police gongs, four repeaters, two switch-boards, five galvanometers, five call-bells, or tappers, two sounders, eighty miles of line wire, two hundred and seventy-five street poles, and two signal-bells.

Of stock on hand November 30, there were one and a half miles of compound wire, half a mile of galvanized wire No. 9, four tripods, one hundred and forty battery zincs, two and a half pounds each, twenty-four ridge brackets, one chimney bracket, thirty-six battery jars, ten hundred and sixty-six pounds blue vitriol, one horse, one wagon, one set double runners, one harness, three ladders, and all the necessary tools for building and repairing.

Fire Hydrants and Reservoirs.

The sources of water-supply for use of the Department have been increased during the year, the Superintendent of the Water-Works, Mr. Hiram Nevons, having located new fire hydrants in neighborhoods where the supply was inadequate or where, heretofore, there had been none at all.

The increase of hydrants in all parts of the City during the past seven years has swelled the number to a great extent, thereby enabling the Department to find a water-supply on occasions of fire.

With the general extension of the Water-Works, the honorable Water Board have willingly co-operated with the Chief Engineer in his endeavors to have a liberal distribution of fire hydrants.

The expression of a desire to have a hydrant located at a given point has been most cordially granted by the Water Board, the President, and the Superintendent. To those gentlemen the Chief Engineer feels under deep obligation, inasmuch as the water facilities thus furnished have particularly aided in the extinguishment of fires.

The hydrants which have been located the past six years are of the post pattern, each having two outlets, from which a supply for two steamers can be procured should it be found necessary at any time.

The whole number of hydrants is as follows: —

Flush or surface hydrants having one outlet	349
Post hydrants having two outlets	217

The reservoirs constructed years ago for hand-engine purposes are fast giving out, the wooden material of which they were built having reached a state of rot and decay. Within a few years several of them have been abandoned, and have been solidly filled by the Superintendent of Streets, to prevent accidents by the caving in of the streets.

There are others which will require attention from that officer soon.

Accidents.

The following accidents have occurred since the last Report: —

Mrs. Edward Brown, residing on Vine Street, accidentally set her clothing on fire January 9, and before assistance could reach her she was so terribly burned as to cause her death in a few hours. An

alarm from Box 15 summoned the Department, whose services, however, were not required, as the building did not take fire.

While responding to an alarm of fire from Box 9, April 30, Mr. Albert F. Sawyer, of Engine Company No. 2, dislocated one of his ankles, from which accident he suffered several weeks.

The falling of a portion of a burnt building on the premises of Messrs. Allen & Endicott, June 23, caused slight injuries to Captain Scanlan, and hosemen Fitzgerald and Glynn, and substitute King of Engine Company No. 5, Assistant Benson, and laddermen Ewell, Dow, and Morey, and substitute Oliver of Truck Company No. 1.

At the burning of the oil-clothing manufactory of Messrs. Pettingill & Sawyer, August 7, Mr. William F. Newman, of Engine Company No. 3, was painfully burned about the face and neck by the intense heat from the fire. Other firemen also received slight burns.

While responding to an alarm of fire from Box 73, September 26, the telegraph-wagon was overturned on Brattle Street, and Messrs. Blaisdell and Campbell, telegraph operators, and Arthur W. Daniels were thrown to the ground with great violence. Mr. Blaisdell received injuries of a painful nature, the base of the spine being severely shocked. After several weeks of intense suffering, he is now able to be about, and, it is hoped, will be restored to complete health.

Mr. Campbell sustained a fracture of a bone in his right leg above the ankle joint, which caused him much pain. He is now fully recovered.

Mr. Daniels escaped with slight injuries.

At a fire on the premises of George Woods & Co., organ manufacturers, Central Square, September 27, Mr. George P. Carter, a member of the firm, fell into a basement area, and broke one of his legs.

Admissions and Discharges.

Changes have taken place in the membership of the Department during the year, as follows:—

Name of Company.	When Admitted.		When Discharged.		Cause of Discharge.
Board of Engineers	Nathaniel W. Bunker	Apr. 11	Daniel O'Connell	Apr. 11	Not reappointed.
" "	Charles W. Brackett	June 13	John P. Farmer, Jr.	June 13	Resigned.
Engine Co. No. 1	James Jefferson	June 27	Charles W. Brackett	June 13	Promot'd to office of Ass't Engin'r.
" " 2	Not reappointed by reason of reduction of the force.		Edward Brady	Jan. 3	Not reappointed.
" " 3	Thomas J. Dale	Jan. 3	Willliam F Newman	Jan. 3	Not reappointed.
" " "	William F. Newman	June 27	Thomas J. Dale	June 20	Resigned.
" " 4	J. Herbert Griffin	Apr. 25	Nathaniel W. Bunker	Apr. 11	Promot'd to office of Ass't Engin'r.
" " "	John W. Holbrook	" "	George E. Gilkey	" 18	Resigned.
" " 5	George T. Brown, Jr.	Aug. 29	Charles H. Barker	Jan. 3	Not reappointed.
			Thomas E. Banfield	Aug. 18	Resigned.
H. & L. Co. No. 1	Under the amended ordinance, reducing the H. & L. comp's from 21 to 17 members, only the latter number was appointed.		James A. Bushee	Jan. 3	Not reappointed.
" " "			Charles E. Warren	" "	"
" " "			John H Jacobs	" "	"
" " "			Hamilton Porter	" 11	Transferred to H. & L. Co. No. 2.
H. & L. Co. No. 2	George H. Taylor	Jan. 10	James Dalton	Jan. 10	Not reappointed.
" " "	Charles L. Pike	" "	James J. Fleming	" "	"
" " "	Joseph E Chick	" "	John S. Dooris	" "	"
" " "	William Haley	" "	John Lennon	" "	"
" " "	Charles H. Chapman	" "	John McCarty	" "	"
" " "	Freeman R. Richards	" "	Richard T. Marvin	" "	"
" " "	George E. Carter	" "	Timothy Mahoney	" "	"
" " "	Hamilton Porter	" "	William J. Stinson	" "	"
			Timothy J. McHugh	" "	"
			Peter McNally	" "	"

Daily and Monthly Classification of Alarms.

The annexed table shows the day of the week on which alarms have occurred, and the number in each month, commencing December 1, 1876, and ending November 30, 1877:—

1876-77.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Totals.
Sunday . .	..	1	2	2	..	1	1	..	..	2	..	1	10
Monday . .	..	..	1	..	1	1	..	1	..	2	..	1	7
Tuesday . .	..	2	2	..	1	..	1	3	4	..	2	1	16
Wednesday .	1	..	..	1	..	1	3	1	2	3	..	1	13
Thursday .	2	..	1	..	2	..	1	2	..	3	1	..	12
Friday . .	1	..	..	4	1	1	..	..	3	1	1	1	13
Saturday. .	1	..	..	2	3	1	1	1	4	..	..	..	13
Totals . .	5	3	6	9	8	5	7	8	13	11	4	5	84

Wards in which Alarms occurred.

The following table will show the location of fire-alarms by wards, from December 1, 1876, to November 30, 1877 :—

Ward.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Totals.
1	1	1	..	2	2	..	1	..	4	..	1	..	12
2	1	..	2	3	2	3	..	3	..	5	2	2	23
3	1	1	1	2	1	2	2	3	4	..	1	1	19
4	..	1	1	1	1	..	2	1	4	4	..	1	16
5	2	..	2	1	2	..	2	1	1	2	..	1	14
Totals	5	3	6	9	8	5	7	8	13	11	4	5	84

Hours at which Alarms were given.

The following table shows the hour at which alarms were given, the fractions of time being omitted:—

1876-77.	A. M.												Total A.M.	P. M.											Total P.M.	Totals.
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12	
December	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	1	..	..	1	4	5
January	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	1	..	..	..	2	3
February	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	1	1	..	..	..	..	6	6
March	2	..	..	..	1	..	..	1	1	..	1	..	6	..	1	..	..	..	..	1	..	..	..	1	..	3	9
April	1	..	..	..	1	..	..	2	..	..	..	1	5	..	1	..	..	..	..	..	..	..	1	1	..	3	8
May	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	1	1	..	5	5
June	1	1	..	..	..	..	..	1	..	..	..	..	3	..	..	1	1	..	..	..	..	..	2	..	..	4	7
July	..	..	..	..	1	..	..	..	..	..	1	..	2	1	..	1	..	..	..	..	..	3	..	1	..	6	8
August	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	..	..	..	1	1	1	..	1	4	13	13
September	..	1	..	..	..	..	..	..	1	..	..	..	2	1	1	2	..	..	..	2	..	1	..	1	1	9	11
October	..	..	..	..	..	..	1	..	..	..	1	..	2	..	..	..	..	1	1	..	..	..	..	..	..	2	4
November	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	1	1	..	..	4	5
Totals	6	2	..	..	3	..	1	4	2	..	4	1	23	5	8	5	4	2	4	6	2	9	5	5	6	61	84

Roll of Honor.

Since the last Report, the following persons, former members of the Department, have died: —

Capt. George B. Eaton, for more than thirty years a member of the force, died suddenly at Paris, Me., August 24. The deceased was Chief of the Department fifteen years, thirteen of which were consecutive. He was a warm friend of those with whom he mingled, and his death was deplored by them.

On the occasion of his obsequies members and ex-members of the Department escorted the remains to their last resting-place in Mount Auburn Cemetery.

Capt. Jacob A. Holt, for several years connected with the Department, died in January last, after a protracted illness of consumption.

Capt. Holt, during his term of service, was a prompt and efficient fireman.

The death of Capt. Thomas Drinan occurred in April. The deceased was at one time foreman of Truck Company No. 1, which position he filled to the satisfaction of his superior officers.

Cambridge Firemen's Relief Association.

This association, organized in 1869, for the purpose of rendering aid to sick and disabled firemen, has been the recipient of generous contributions from citizens whose property has been saved from destruction by fire. By the receipt of these liberal donations quite a fund has been accumulated during the past seven years, so that now the Association has a bank account of more than $ 2,600. Aid to a large extent has been disbursed to sick members within the time named.

The officers of the association are as follows: —

President. — P. H. Raymond.
Vice-President. — William H. Emory.
Secretary. — Charles Emerson.
Treasurer. — William B. Cade.
Trustees. — P. H. Raymond, William H. Emory, William B. Cade, William Parker, Edgar H. Locke, Francis P. Scanlan, Charles Emerson, Walter R. Marsh.

Acknowledgments.

I desire to express my personal acknowledgments to His Honor the Mayor for his uniform courtesy, and for the interest manifested by him in all matters connected with this Department.

I feel under deep obligation to the honorable City Council for its support of measures which I have had the honor to recommend or suggest from time to time.

The Joint Standing Committee on Fire Department, Aldermen Munroe and Smith, and Councilmen Whiting, McSorley, and Poland, will please accept the expression of my appreciation of their cordiality towards me during the year.

The members of the Board of Engineers, and the officers and members of the several companies, are also entitled to my thanks for their prompt performance of duty.

I feel grateful to the Chief of Police and his subordinate officers for their attendance at fires.

I desire also to extend my thanks to the City Clerk, the City Treasurer, the Clerk of Committees, the Water Board, the Water Registrar, the Superintendent of the Water-Works, and all others who have in any way contributed favors to this Department.

The Boston Board of Fire Commissioners, Chief Engineer Green, and the firemen of that city, will accept my thanks for services rendered and courtesies extended.

To Chief Engineer Hopkins and the members of the Somerville Fire Department I feel deeply indebted for assistance rendered at fires in this city.

Respectfully submitted,

PATRICK H. RAYMOND,

Chief Engineer Cambridge Fire Department.

APPENDIX.

Joint Standing Committee on Fire Department.

ALDERMEN . . . . . Munroe and Smith.
COUNCILMEN . . . . . Whiting, Poland, and McSorley.

Board of Engineers.

Name.	Rank.	Age.	Occupation.	Residence.	Salary per ann.
Patrick H. Raymond.	Chief .	47	Reporter	10 Pleasant St.	$ 1,200
Thomas J. Casey . .	1st Ass't	44	Carver	173 Cambridge St.	400
Richard F. Tobin . .	2d Ass't	33	Iron Moulder	5 Winsor St.	400
Nathaniel W. Bunker	3d Ass't	34	Carpenter	6 Beech St.	400
Charles W. Brackett	4th Ass't	41	Clerk	133 Mt. Auburn St.	400
Nathaniel W. Bunker	Sec'y				50

Cambridge Steam Fire-Engine Company, No. 1.

House in Brattle Square, City Building.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
Edward E. Priest .	Engineer	40	3	Engineer	$90.00
Hiram W. Hooker .	Driver	39	5	Driver	75.00
Robert T. Hixon .	Driver	33	10	Driver	75.00
William H. Emory .	Foreman	44	1	Printer	18.33
Edward E. Keyes .	Fireman	26	7	Bookbinder . . .	16.67
John L. Jones, jr. .	Hoseman	26	4	Printer	16.67
John K. Perkins . .	"	28	12	Cabinet-maker . .	16.67
Thomas W. Jones .	"	28	8	Electrotype Finisher	16.67
John H. Brown . .	"	26	11	Cigar-maker . . .	16.67
John E. Belcher . .	"	24	6	Clerk	16.67
Edward B. O'Brien .	"	26	9	Produce-dealer . .	16.67
James Jefferson . .	"	24	2	Wood-worker . .	16.67

The engine operated by the above company was built by the Amoskeag Manufacturing Company, Manchester, N. H., and is rated as second-class. It is supplied with one steam cylinder 8½ inches

in diameter, one double-acting, vertical plunger pump $4\frac{3}{4}$ inches in diameter, with 12-inch stroke. The engine is supplied with two copper tanks, which contain a supply of fresh water, to be used when drafting sea-water. The engine, when worked to its full capacity, will discharge 400 gallons per minute. Put in service September 18, 1864.

Union Steam Fire-Engine Company, No. 2.

House on Main Street, near Winsor.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
Thomas Wiseman .	Engineer	33	17	Engineer	$90.00
John H. Walker. .	Driver	48	19	Driver	75.00
William H. Foss .	Driver	37	27	Driver	75.00
William B. Cade .	Foreman	43	15	Polisher	18.33
Amos B. Jarvis . .	Fireman	33	24	Bookbinder . . .	16.67
Daniel McCarty . .	Hoseman	41	21	Blacksmith. . . .	16.67
Arthur C. Day . .	"	40	25	Box-maker . . .	16.67
James Cunningham	"	35	28	Wood-turner . . .	16.67
Benjamin D. Foss .	"	41	18	Carpenter	16.67
Charles E. Conner .	"	26	23	Machinist	16.67
Albert F. Sawyer .	"	34	20	Painter	16.67
Joseph Fellows . .	"	26	22	Clerk	16.67

The engine in charge of this company was contracted for in August, 1873, and put in service November 28, 1873. The engine is of second-class construction, and was built by the Amoskeag Manufacturing Company, Manchester, N. H., where the several engines in the Department were constructed.

The boiler contains 301 brass tubes, each tube being 18 inches long and $1\frac{1}{4}$ inches in diameter. The main forcing pump, double-acting and made of brass, measures $4\frac{1}{4}$ inches in diameter, and has a stroke of 8 inches. The steam cylinders have a diameter of $6\frac{7}{8}$ inches, and an 8-inch stroke.

The weight of the engine with fuel and water is 6,250 pounds.

Niagara Steam Fire-Engine Company, No. 3.

House on Fourth Street, near Cambridge.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
Hiram Blood . . .	Engineer	45	31	Engineer	$90.00
James S. Casey . .	Driver	41	33	Driver	75.00
Lorenzo H. Dale .	Driver	35	34	Driver	75.00
William Parker . .	Foreman	37	29	Carver	18.33
Elliott E. Alley . .	Fireman	41	31	Upholsterer . . .	16.67
Michael G. Collins .	Hoseman	33	36	Painter	16.67
Edwin Winward . .	"	31	40	Box-maker . . .	16.67
Geo. F. Batchelder .	"	26	43	News-dealer . . .	16.67
Alexander S. Atkins	"	32	35	Saloon-keeper . .	16 67
John Casey . . .	"	27	41	Britannia-worker .	16.67
William F. Newman	"	31	38	Wood-worker . .	16.67
Cornelius J. Donovan	"	33	32	Wood-turner . . .	16.67

The engine in charge of this company was contracted for in 1871, and put in service January 19, 1872, and is a fine and very powerful specimen of steam machinery used for the extinguishment of fires. Like all other steamers owned by the City, it was built by the Amoskeag Manufacturing Company, of Manchester, N. H. The engine is of first-class construction, and has a boiler 32 inches in diameter and 66 inches long, containing 301 brass tubes, each tube being 18 inches long and $1\frac{1}{4}$ inches in diameter.

The main forcing pump is $4\frac{3}{8}$ inches in diameter, and has a stroke of 8 inches in length. The steam cylinders measure $7\frac{3}{4}$ inches in diameter, with a stroke of piston of 8 inches.

Daniel Webster Steam Fire-Engine Company, No. 4.

House on North Avenue, near Russell Street.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
John E. Ricker	Engineer	33	45	Engineer	$90.00
George T. Presby	Driver	35	47	Driver	75.00
George E. Muzzey	Driver	35	48	Driver	75.00
Benjamin Young	Foreman	33	49	Carpenter	18.33
Sylvanus G. Griffin	Fireman	30	46	Machinist	16.67
William H. Harrison	Hoseman	29	50	Bill-poster	16.67
Edgar H. Locke	"	31	53	Provision-dealer	16.67
Thomas J. Benwell	"	26	56	Clerk	16.67
Frank C. Mullett	"	24	51	Confectioner	16.67
Hugh T. Barker	"	27	54	Confectioner	16.67
J. Herbert Griffin	"	25	43	Carpenter	16.67
John W. Holbrook	"	35	55	Carriage-trimmer	16.67

The Engine controlled by this company is of the double pump, second-class, small size pattern, with $4\frac{1}{8}$-inch pump cylinders, and 8-inch stroke, steam cylinders $6\frac{7}{8}$-inch diameter, and 8-inch stroke; and, without fuel or water, in weight 5,800 pounds. It was built by the Amoskeag Manufacturing Company, of Manchester N. H., and put in service May 28, 1869.

P. H. Raymond Steam Fire-Engine Company, No. 5.

House in Inman Square.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
Charles E. Berry	Engineer	30	102	Engineer	$90.00
Joseph P. Cartwright	Driver	41	104	Driver	75.00
Francis P. Carr	Driver	33	105	Driver	75.00
Francis P. Scanlan	Foreman	31	100	Painter	18.33
Charles W. Porter	Fireman	29	103	Clerk	16.67
Dana R. Hovey	Hoseman	38	106	Clerk	16.67
John D. DeRonde	"	38	108	Cabinet-maker	16.67
Conrad D. Kinnear	"	38	101	Clerk	16.67
James F. Glynn	"	26	109	Iron-moulder	16.67
George W. Butler	"	35	111	Engineer	16.67
John Fitzgerald	"	30	110	Iron-moulder	16.67
George T. Brown, jr.	"	29	107	Clerk	16.67

The engine operated by this company is of the same pattern as Nos. 2 and 3, and was purchased in 1876 to take the place of the single-pump engine at first put in service when the company was organized, November 30, 1874.

Supply Hose Carriage, No. 1.

House on Green Street, City Building.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
Lewis C. Clark . .	Driver	32	78	Driver	$ 75.00

Franklin Hook-and-Ladder Company, No. 1.

House in City Building, corner Western Avenue and Green Street.

Name.	Rank.	Age.	No. of Badge.	Occupation.	Monthly Pay.
George W. Lamson	Driver	36	59	Driver	$ 75.00
Charles Emerson .	Foreman	32	69	Confectioner . .	18.33
Albert S. Benson .	Assistant	33	72	Box-maker . . .	17.50
James P. Ewell . .	Ladderman	41	62	Piano-Forte key-maker . . .	16.67
Charles S. Abbott .	"	37	65	Ivory-layer . .	16.67
Chas. H. Wiggin, jr.	"	29	70	Musician . . .	16.67
Charles H. Waite .	"	31	73	Clerk	16.67
George R. Oliver .	"	26	57	Polisher	16.67
John T. Mahaffey .	"	32	67	Carpenter . . .	16.67
William Parks . .	"	33	77	Iron-moulder . .	16.67
Daniel E. Owen . .	"	33	60	Carpenter . . .	16.67
William H. Lydston	"	30	68	Carpenter . . .	16.67
Clarence A. Moore .	"	27	58	Confectioner . .	16.67
Charles A. Sharon .	"	28	64	Machinist . . .	16.67
Joseph B. Farmer .	"	39	74	Steam and gas-fitter	16.67
Warren H. Dow . .	"	27	71	Box-maker . . .	16.67
Elisha W. Morey .	"	30	61	Furniture-polisher	16.67

Mayor Bradford Hook-and-Ladder Company, No. 2.

House on Cambridge Street, corner of Portland.

Name.	Rank.	Age.	No. of Badge	Occupation.	Monthly Pay.
Jeremiah R. Hobbs.	Driver	30	81	Driver	$ 75.00
Alford F. Chadwick	Foreman	42	88	Carpenter . . .	18.33
Walter R. Marsh .	Assistant	40	83	Oil-Clothes maker	17.50
Jacob F. Bradeen .	Ladderman	44	84	Teamster . . .	16.67
Philip C. Munroe .	"	36	91	Furniture-mover .	16.67
Thomas L. Hunter .	"	37	93	Iron-moulder . .	16.67
James M. Keaney .	"	26	94	Pork-packer . .	16.67
Michael Cairns . .	"	40	95	Carpenter . . .	16.67
Orville W. Van Duzee	"	31	82	Iron-moulder . .	16.67
George H. Taylor .	"	42	79	Sail-maker . . .	16.67
Hamilton Porter. .	"	34	90	Blacksmith . . .	16.67
William Haley . .	"	29	86	Cabinet-maker .	16.67
Charles H. Chapman	"	24	89	Building-mover .	16.67
George E. Carter .	"	28	80	Picture-frame maker	16.67 16 67
Charles L. Pike . .	"	29	85	Box-maker . . .	16.67
Freeman R. Richards	"	26	92	Carpenter . . .	16.67
Joseph E. Chick . .	"	27	87	Box-maker . . .	16.67

Both Hook and Ladder Trucks are drawn to fires by horses, and each truck is furnished with proper appurtenances.

Relief Engineer.

Name.	Rank.	Age.	Occupation.	Monthly Pay.
John D. Thompson.	Engineer . .	36	Engineer	$ 90.00

Cambridge Fire-Alarm Telegraph.

Battery Station in City Building, Ward One.

Name.	Rank.	Age.	Occupation.	Monthly Pay.
George J. Blaisdell.	Telegraph Operator	33	Telegraph Operator	$ 90.00
David J. Campbell .	Assistant Operator	30	Assistant Operator	75.00

CAMBRIDGE FIRE-ALARM TELEGRAPH.

Location of Signal-Boxes.

No.	
2.	Bridge Street, corner of Prison Point.
6.	Third Street, corner of Broadway.
7.	Third Street, corner of Bent.
8.	Third Street, corner of Thorndike.
9.	Cambridge Street, Beal & Hooper's Building.
12.	Winter Street, corner of Third.
12.	North Street, corner of Water (duplicate.)
13.	Fourth Street, No. 3 Engine House.
14.	Sixth Street, corner of Cambridge.
15.	Vine Street, corner of Fifth.
16.	Broadway, Hancock & Greely's Building.
17.	Washington Street, corner of Brewery.
21.	Sydney Street, corner of Allston.
23.	Pearl Street, corner of Auburn.
24.	Brookline Street, corner of Valentine.
25.	Main and Front Streets (junction).
26.	Main Street, corner of Osborn.
27.	Clark Street, corner of Harvard.
28.	Broadway, opposite Page's Box-Factory.
29.	Pine Street, corner of Washington.
31.	Cambridge Street, corner of Harding.
32.	Cambridge Street, corner of Columbia.
34.	Columbia Street, corner of Hampshire.
35.	Harvard Street, corner of Norfolk.
36.	Main Street, corner of Western Avenue.
37.	Pleasant Street, corner of River (junction).
38.	Magazine Street, corner of Lake.
39.	Magazine Street, corner of Chestnut.
41.	Pleasant Street, corner of Fairmont.
42.	Blackstone Street, opposite Riverside Press.
43.	Banks Street, corner of Flagg.
45.	Franklin Street, near Soden.
46.	Main Street, corner of Hancock.
47.	Broadway, corner of Antrim.
48.	Cambridge Street, corner of Hampshire (junction).
49.	Cambridge Street, corner of Baldwin.
51.	Broadway, corner of Ellery.
52.	Mt. Auburn and Main Streets (junction).
53.	Bow Street, corner of Linden.
54.	Cambridge Street, corner of Sumner.
57.	Oxford Street, corner of Mellen.
59.	Harvard Square, Ramsay's Apothecary.
61.	Brattle Square, City Building.
62.	Mt. Auburn Street, corner of Hilliard.
63.	Brattle Street, corner of Mason (junction).
64.	Garden Street, corner of Chauncy.
65.	North Avenue, corner of Shepard.
68.	North Avenue, near Railroad Bridge.
69.	North Avenue, No. 4 Engine House.

No.	
71.	North Avenue, near Tannery.
72.	Cedar Street, Hotel Building.
73.	Spruce Street, near Bay State Brick Yard.
74.	Dublin Street, corner of Railroad.
75.	Walden Street, corner of Raymond.
78.	Concord Avenue, corner of Sparks.
79.	Brattle Street, corner of Sparks.
82.	Brattle Street, corner of Elmwood Avenue.
83.	Mt. Auburn Street, near Belmont line.
91.	North Avenue, Union Railway car-house.
92.	Gore Street, J. P. Squire's Building.

Location of Bell-Strikers.

Unitarian Church, Harvard Square	Ward One.
Methodist Church, Harvard Street.	Ward Two.
Putnam School-house, Fourth Street	Ward Three.
Webster School-house, Upton Street . . .	Ward Four.
Baptist Church, North Avenue	Ward Five.

Instruction to Key-Holders.

Alarms are to be given from the box nearest the location of the fire.

To give an alarm, open the door, pull the hook to the bottom of the slot once, and let go.

Each box contains a small bell which, if heard before you pull, indicates that the alarm has been previously given. Any person listening at a box will learn the number of the box from which the alarm was given. For instance: If an alarm proceeds from Box 36, the bells and gongs attached will strike three, then after a short pause, six consecutive blows, thus: III—IIIIII.

Don't give an alarm for a fire seen at a distance unless assistance is called for.

Citizens are earnestly requested to inform themselves where keys to the signal-boxes are kept; signs suitably inscribed, are placed over each box, giving the requisite information.

Instruction to Firemen, etc.

Companies not required to respond to first or second alarms will be notified by two strokes on the gongs that their services WILL NOT be needed, and that orders have been given to "make up." Should an alarm be given from any box while a portion of the Department is engaged at a fire, the engine or ladder company located nearest to such box will immediately answer such alarm. Engine companies answering third alarms will also respond in the same manner as is described in the preceding sentence.

Police officers and citizens who may give an alarm of fire are requested to remain at the signal-box until the arrival of an engine or ladder company, and then direct them to the locality of the fire.

OPERATIONS OF THE DEPARTMENT.

The several companies connected with the Fire Department will respond on the occasion of alarms of fire in the following order: —

Cambridge Engine Company, No. 1.

First Alarm. — Boxes Nos. 21, 23, 24, 25, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 54, 57, 59, 61, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91.

Second Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 26, 27, 28, 29, 31, 32, 34, 35, 92.

Union Engine Company, No. 2.

First Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 21, 23, 24, 25, 26, 27, 28, 29, 31, 32, 34, 35, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 59, 61, 92.

Second Alarm. — Boxes Nos. 54, 57, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91.

Niagara Engine Company, No. 3.

First Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 26, 27, 28, 29, 31, 32, 34, 35, 92.

Second Alarm. — Boxes Nos. 25, 36, 37, 45, 47, 48, 49.

Third Alarm. — Boxes Nos. 21, 23, 24, 38, 39, 41, 42, 43, 46, 51, 52, 53, 54, 57, 59, 61, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91.

Daniel Webster Engine Company, No. 4.

First Alarm. — Boxes Nos. 54, 57, 59, 61, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91.

Second Alarm. — Boxes Nos. 41, 42, 43, 46, 47, 48, 49, 51, 52, 53.

Third Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 21, 23, 24, 25, 26, 27, 28, 29, 31, 32, 34, 35, 36, 37, 38, 39, 45, 92.

P. H. Raymond Engine Company, No. 5.

First Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 21, 23, 24, 25, 26, 27, 28, 29, 31, 32, 34, 35, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 54, 57, 59, 61, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91, 92.

Franklin Hook-and-Ladder Company, No. 1.

First Alarm. — Boxes Nos. 6, 16, 17, 21, 23, 24, 25, 26, 27, 28, 29, 35, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 54, 57, 59, 61, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91.

Second Alarm. — Boxes Nos. 2, 7, 8, 9, 12, 13, 14, 15, 31, 32, 34, 92.

Mayor Bradford Hook-and-Ladder Company, No. 2.

First Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 26, 27, 28, 31, 32, 34, 35, 36, 47, 48, 92.

Second Alarm. — Boxes Nos. 21, 23, 24, 25, 29, 37, 38, 39, 41, 42, 43, 45, 46, 49, 51, 52, 53, 54, 57, 59, 61, 62, 63, 64, 65, 68, 69, 71, 72, 73, 74, 75, 78, 79, 82, 83, 91.

Supply Hose Carriage, No. 1.

First Alarm. — Boxes Nos. 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 21, 23, 24, 25, 26, 27, 28, 29, 31, 32, 34, 35, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 54, 59, 61, 62, 63, 64, 79, 82, 83, 92.

Second Alarm. — Boxes Nos. 57, 65, 68, 69, 71, 72, 73, 74, 75, 78, 91.

The Third Alarm will be given by striking three strokes on the gongs and bells.

Hook-and-Ladder Companies not required to respond to the First or Second Alarm Calls will answer the Third Alarm, as above.

RECORD OF FIRES AND ALARMS FROM DECEMBER 1, 1876, TO NOVEMBER 30, 1877.

Day of Week.	Date.	Hour.	Box.	Owners of Property.	Occupants of Property.	Location of Fires.	Loss.	Insurance.	Apparatus present.	Remarks.
	1876.									
Thursday...	Dec. 7	3.50 P.M.	79	Patrick Sullivan.....	Patrick Sullivan.....	Foster Street..	Trifling...	.....	Engines 1, 4, & 5, H. & L. 1, Supply Hose 1.	Burning of dry leaves in shed.
Wednesday..	" 20	1.06 A.M.	69	R. M. Otis.....	R. M. Otis.....	North Avenue.	Trifling...	.....	Engines 1, 4, & 5, H. & L. 1.	Ignition of alcohol placed too near a lighted lamp.
Thursday...	" 21	7.40 P.M.	48	A. W. Cone.....	A. W. Cone.....	Inman Street..	Trifling...	.....	Engines 1, 2, & 5, H. & L 1 & 2, Supply Hose 1.	Bursting of a naphtha lamp.
Friday.....	" 29	12.30 P.M.	Bell	Unknown.....	Unknown.....	Somerville....	.....	.....	Engine 4.	Fire in Somerville. Bell alarm in Ward 5 only.
Saturday....	" 30	9.09 P.M.	8	Hugh McGinnis	Hugh McGinnis	Vine Street....	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of window-curtain.
	1877.									
Tuesday	Jan. 9	11.45 A.M.	15	Edward Brown.....	Edward Brown	Vine Street....	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Mrs. Brown, an elderly woman, caught her clothing on fire, and was so severely burned as to cause her death in a few hours.
Tuesday	" 16	9.18 P.M.	59	William Elliott.....	William Elliott.....	Brighton Street.	$100	$100	Engines 1, 2, 4, & 5, H. & L. 1, Supply Hose 1.	Fire in blacksmith and wheelwright shop, probably caused by pipe-smoking.
				" "	Henry J. Connelly...	" "	300	300		
Sunday.....	" 21	2.05 P.M.	26	Allen & Endicott....	Janes & Co.....	Main Street...	3,500	3,000	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in building containing stock for the manufacture of flour-barrels. As no fire was kept in the building, it is thought that the fire was maliciously set.
				" "	Allen & Endicott....	" "	1,188	1,188		
Thursday...	Feb. 1	6.20 P.M.	26	Howe Heirs	Thomas Martin.....	" "	575	575	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in a furniture-store, caused by the bursting of a kerosene lamp.
				" "	A. Skoog	" "	Trifling...	.....		
				" "	Howe Heirs.....	" "	$155	155		
Tuesday	" 6	5.50 P.M.	Bell	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 4.	Fire in Somerville. Bell alarm in Ward 5 only.
Sunday.....	" 11	7.45 P.M.	Bell	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 4.	Fire in Somerville. Bell alarm in Ward 5 only.
Sunday.....	" 11	8.45 P.M.	27	James McKeon.....	Several Families.....	Webster Av. ..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Overheated stove set wood-work on fire.
Monday.....	" 19	2.25 P.M.	34	Hannah Shea	Several Families.....	Hampshire St.	$110	110	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Fire in sleeping-room, probably caused by pipe-smoking.

Tuesday	Feb. 20	4.00 P.M.	9	Woodbury & Co.....	Woodbury & Co.....	Thorndike St..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of shavings in boiler-room.
Friday	Mar. 2	11.31 P.M.	59	Samuel Batchelder...	Samuel Batchelder ..	Brattle Street .	$ 100	$ 100	Engines 1, 2, 4, & 5, H. & L. 1, Supply Hose 1.	Fire in storage shed, origin unknown.
				" "	——— Tucker	" "	300	.....		
Wednesday .	" 7	2.35 P.M.	26	Osborn Heirs.....	Silas Rhoades & Co..	State Street...	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire on roof of workshop, caused by sparks from chimney.
Friday	" 9	5.40 A.M.	Bell	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 4.	Fire in Somerville, bell alarm in Ward 5 only.
Friday	" 9	7.00 P.M.	Bell	E. T. Nichols.....	E. T. Nichols.....	Columbia St...	Trifling...	.....	Engine 2.	Fire in L of house, bell alarm in Ward 4 only.
Sunday.....	" 11	1.03 A.M.	9	C. W. Munroe.....	C. W. Munroe.....	Thorndike St..	$ 1,090	1,090	Engines 1, 2, 3, & 5, H & L. 2, Supply Hose 1.	Fire in picture-moulding manufactory, probably of incendiary origin.
Sunday.....	" 11	1.08 A.M.	9	" "	G. A. Denham & Co.	" "	11,098	3,300		
Saturday....	" 17	8.20 A.M.	34	D. Govan	D. Govan	Hampshire St.	1,000	1,000	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Fire in dwelling, caused by a boy playing with a gas-jet.
Saturday....	" 17	11.00 A.M.	Still	Unknown.....	Unknown.....	Brighton.....	.....	.....	Engine 1.	Fire in Brighton, to which Engine 1 responded.
Friday	" 30	9.29 A.M.	34	John Campbell.....	John Campbell.....	Union Street..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of articles of clothing in dwelling-house.
Tuesday.....	Apr. 10	2.00 P.M.	Still	Unknown.....	Unknown.....	Waterhouse St.	.....	.....	Hose Carriage 1.	Apparatus called to extinguish a fire in a hollow trunk of a tree.
Thursday...	" 12	8.15 A.M.	74	A. W. Maitland.....	A. W. Maitland.....	Dublin Street .	Trifling...	.....	Engines 1, 4, & 5, H. & L. 1.	Burning of matches in closet of dwelling-house.
Thursday...	" 12	9.45 P.M.	Still	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 5.	Fire in Somerville, to which Engine 5 responded.
Friday	" 13	12.20 A.M.	45	Martin McDonald....	Peter Tumilty.....	Kinnaird St...	$ 800	375	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Fire in stable and dwelling-house, probably of incendiary origin.
Saturday....	" 14	5.57 A.M.	79	Owen Carney.....	Owen Carney.....	Brown Street..	42	42	Engines 1, 4, & 5, H. & L. 1, Supply Hose 1.	Fire in dwelling-house, of accidental origin.
Saturday....	" 21	8.47 A.M.	48	City of Cambridge...	City of Cambridge...	Amory Street .	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1 & 2, Supply Hose 1.	Smoke from furnace in school-house occasioned an alarm.
Saturday....	" 21	1.00 A.M.	Bell	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 4.	Fire in Somerville, alarm in Ward 5 only.
Monday.....	" 30	10.00 P.M.	9	Heudley Heirs.....	Otis S. Brown & Co..	Bridge Street..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Explosion of kerosene lamp in counting-room. While responding to alarm hoseman A. F. Sawyer, of Engine 2, dislocated an ankle.
Sunday.....	May 13	1.05 P.M.	17	Catherine Otto.....	Several Families.....	Harvard St....	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Alarm caused by burning meat on stove while cooking.
					Amounts carried forward.....		$ 20,358	$ 11.335		

RECORD OF FIRES AND ALARMS FROM DECEMBER 1, 1876, TO NOVEMBER 30, 1877. — *Continued.*

Day of Week.	Date.	Hour.	Box.	Owners of Property.	Occupants of Property.	Location of Fires.	Loss.	Insurance.	Apparatus present.	Remarks.
	1877.				Amounts	brought forward	$ 20,358	$ 11,335		
Monday.....	May 14	6.15 P.M.	9	John Towne.....	Several parties	East Street	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of clothing in closet.
Wednesday..	" 16	6.28 P.M.	6	Day & Collins.....	Day & Collins.....	Main Street...	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Overheated stove-pipe in drain-pipe establishment, set wood-work on fire.
Friday.....	" 18	10.17 P.M.	48	Unknown.....	Unknown.....	Somerville	.....	.....	Engines 1, 2, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in Somerville, near Cambridge line.
Saturday....	" 19	11.41 P.M.	9	Woodbury & Co.....	Woodbury & Co.....	Thorndike St .	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of shavings in boiler-room.
Wednesday..	June 6	8.15 A.M.	73	Connor Heirs.....	Several parties.....	Spruce Street..	Trifling...	.....	Engines 1, 4, & 5, H. & L. 1.	Partial burning of a bundle of hay in stable.
Tuesday	" 12	1.45 A.M.	91	William O'Brien.....	Several parties	Harvey Street.	$ 300	$ 300	Engines 1, 4, & 5, H. & L. 1.	Fire in dwelling, probably caused by carrying a lighted lamp into a closet.
Wednesday..	" 13	10.05 P.M.	37	William Norris.....	F. A. Cobb.....	Pleasant St ...	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Burning of a window-curtain, which took fire from gas-jet.
Thursday....	" 14	2.25 A.M.	9	Woodbury & Co.....	Woodbury & Co.....	Thorndike St..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of shavings in boiler-room.
Sunday.....	" 17	3.00 P.M.	12	Edward McMahon...	Edward McMahon ...	Water Street..	$ 25	25	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Clothing in closet caught fire, probably from a tobacco-pipe.
Saturday....	" 23	4.45 P.M.	26	Allen & Endicott....	Walworth Manuf. Co.	Main Street ...	12,650	8,000	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in pattern-shop. Several firemen were injured by a portion of the building falling with them, mention of which is made elsewhere.
					Allen & Endicott....	" "	1,188	1,188		
Wednesday..	" 27	10.55 P.M.	Still	Harvard College.....	Harvard College.....	Kirkland St...	Trifling...	.....	Engine 1.	Small building connected with the Scientific School, set on fire.
Wednesday..	July 4	9.45 P.M.	25	William H. Leach ...	William H. Leach ...	Brookline St ..	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Fire on roof of dwelling-house, caused by a sky-rocket falling upon it.
Thursday....	" 5	11.24 P.M.	Still	Unknown.....	Unknown.....	Somerville.....	.....	.....	Engine 5.	Fire in Somerville, to which Engine 5 proceeded.
Tuesday	" 10	9.00 P.M.	Bell	Unknown.....	Unknown.....	Somerville.....	.....	.....	Engine 4.	Fire in Somerville, bell alarm in Ward 5 only.

Saturday....	" 14	9.35 P.M.	13	Thomas Seymour....	Thomas Seymour....	Winter Street.	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of bedding in a dwelling-house.
Thursday...	" 19	11.33 A M.	14	H. S. Coy	H. S. Coy	Eighth Street .	Trifling...	.....	Engines 2, 3, & 5, H & L. 2, Supply Hose 1.	Division fence, against which combustibles had been placed by boys and fired.
Monday.....	" 23	1.28 P.M.	31	John McElhaney....	John McElhaney....	Porter Street..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of a bed in a dwelling-house.
Tuesday	" 24	5.25 A.M.	Still	Unknown.....	Unknown.....	Somerville.....	.....	.....	Engine 5.	Fire in Somerville, to which Engine 5 proceeded.
Tuesday	" 24	3.31 P.M.	13	John H. Leighton ...	Patrick Murray	Winter Street.	$ 319	319	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Fire in dwelling-house, probably caused by children playing with matches.
Saturday....	Aug. 4	2.02 P.M.	9	William Dailey.....	Several parties	Dailey's Alley.	42	42	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Fire in tenement block, caused by children and matches.
Tuesday	" 7	12.21 P.M.	9	Pettingill & Sawyer..	Pettingill & Sawyer.	Thorndike St..	25,000	16,000	Engines 1, 2, 3, 4, & 5, H. & L. 1 & 2, Supply Hose 1, and portions of the Boston and Somerville Fire Departments, whose aid was solicited.	Fire in oil-clothing factory, which owing to the combustible materials used in the establishment caused it to burn furiously.
Tuesday	" 7	12.30 P.M.	9	F. Geldowsky.....	F. Geldowsky	" "	3,993	3,993		
Tuesday	" 7	12.40 P.M.	9	James Scully	James Scully.....	" "	30	30		
				Mary D. Collins	Mary D. Collins.....	" "	30	30		
Tuesday	" 14	11.17 P.M.	41	Catherine Cole	Herman Rosenblatt..	Fairmont St...	100	50	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Fire in a small stable connected with a dwelling.
Wednesday..	" 15	1.33 P.M.	69	James Dow.....	Unoccupied	Regent Street .	925	925	Engines 1, 4, & 5, H. & L. 1.	Unoccupied dwelling-house set on fire.
Friday.....	" 17	1.33 P.M.	41	John Grinham	Several parties.....	Andrew Street.	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Burning of a coat in attic-room, set on fire by a smoker's pipe.
Saturday ...	" 18	2.06 P.M.	61	John Sweetman	John Sweetman	South Street..	Trifling...	.....	Engines 1, 2, 4, & 5, H. & L. 1, Supply Hose 1.	Dwelling-house struck by lightning.
Saturday ...	" 18	2.34 P.M.	79	Mrs. E. B. Tower....	Mrs. E. B. Tower....	Buckingham St.	$ 200	200	Engines 1, 4, & 5, H. & L. 1, Supply Hose 1.	Building struck by lightning during a violent thunder-storm.
Friday.....	" 24	9.30 P.M.	61	.....	.....	Brattle Square.	.....	.....	Engines 1, 2, 4, & 5, H. & L. 1, Supply Hose 1.	Exhibition alarm given for the benefit of visiting firemen.
Saturday....	" 25	7.00 P.M.	59	William Read.	Orrin Hall	Harvard Sq. ..	1,500	1,500	Engines 1, 2, 4, & 5, H. & L. 1, Supply Hose 1.	Fire in grocery-store, caused by overturning a lighted candle into a measure of kerosene oil which was being drawn.
					William Read.....	" "	300	300		
					Amounts carried forward.....		$ 66,960	$ 44,237		

RECORD OF FIRES AND ALARMS FROM DECEMBER 1, 1876, TO NOVEMBER 1, 1877. — *Continued.*

Day of Week.	Date.	Hour.	Box.	Owners of Property.	Occupants of Property.	Location of Fires.	Loss.	Insurance.	Apparatus present.	Remarks.
	1877.				Amounts brought forward		$66,960	$44,237		
Wednesday .	Aug. 29	8.06 P.M.	26	Hovey Heirs	Howe & Putney.....	Main Street...	50	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in bacon-works.
Friday	" 31	12.05 P.M.	42	J. J. Blevins.....	J. J. Blevins.....	Putnam Av....	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Slight fire in a shed.
Monday.....	Sept. 3	1.00 P.M.	36	Mrs. Mary H. Green.	Charles H. Waite....	Green Street..	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1 & 2, Supply Hose 1.	Overheated stove set wood-work on fire.
Wednesday..	" 5	2.55 P.M.	32	Unknown.....	Unknown.....	Winsor Street.	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of grass in lot.
Thursday...	" 6	3.58 P.M.	74	Frank Neumaier.....	Frank Neumaier.....	Sargent Street.	Trifling...	.....	Engines 1, 4, & 5, H. & L. 1.	Wood-work near chimney caught fire.
Friday.....	" 7	12.38 P.M.	Still	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 5.	Fire in Somerville, to which Engine 5 proceeded.
Sunday.....	" 9	11.35 P.M.	25	John Mulligan	John Mulligan	Front Street Ct.	$134	134	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Fire in dwelling-house, cause unknown.
Thursday...	" 13	7.32 P.M.	17	J. J. Blunt.....	Several families.....	Portland St ...	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Explosion of kerosene-lamp.
Monday.....	" 17	9.25 P.M.	45	O'Connor Heirs	Several Families.....	Franklin St ...	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1, Supply Hose 1.	Explosion of kerosene-lamp.
Wednesday .	" 26	9.45 A.M.	Still	Unknown.....	Unknown.....	Somerville	.....	.....	Engine 5.	Fire in Somerville, to which Engine 5 proceeded.
Wednesday .	" 26	3.40 P.M.	73	O'Connor Heirs.....	Gilbert Brousseau ...	Spruce Street..			Engines 1, 4, & 5, H. & L. 1.	Stable set on fire by children, the fire communicating with a dwelling-house.
					O'Connor Heirs.....	" "	$1,100	1,100		
Thursday...	" 27	7.35 P.M.	36	Chamberlin & Hyde.	George Woods & Co .	Central Square.	Trifling...	.....	Engines 1, 2, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in boiler-room of organ factory.
					Chamberlin & Hyde .	" "	25	25		
Sunday.....	" 30	2.15 A.M.	6	Mason Heirs.....	.....	Main Street...	100	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Fire in kindling-wood factory, probably caused by a defective chimney.
Thursday...	Oct. 4	6.57 P.M.	34	Tolman Willey.....	Raymond and others.	Hampshire St..	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning out of sooty chimney.

Friday.....	" 12	11.45 A.M.	79	Patrick O'Brien.....	Several families	Mt. Auburn St.	Trifling...	.....	Engines 1, 4, & 5, H. & L. 1, Supply Hose 1.	Burning of a mattress in dwelling-house.
Tuesday	" 16	5.30 P.M.	31	James Mullin.....	James Mullin	Harding St....	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Smoky chimney in dwelling-house mistaken for a fire.
Tuesday.....	" 23	7.35 A.M.	13	Jeremiah Sullivan...	Jeremiah Sullivan...	Stevens Ct....	Trifling...	.....	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Burning of bedding in dwelling-house.
Tuesday	Nov. 6	10.45 P.M.	14	John S. Buck.....	Daniel Maloney.....	Otis Street. ...	$ 900	700	Engines 2, 3, & 5, H. & L. 2, Supply Hose 1.	Fire in tin-pedler's storehouse, having an unknown origin.
					John S. Buck.....	" "	75	.....		
Friday.....	" 9	1.45 A.M.	16	George P. Carter....	F. C. Murphy.....	Sixth Street...	100	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Slight fire in old building.
Sunday.....	" 18	4.42 P.M.	73	Bay State Brick Co..	Bay State Brick Co..	Spruce Street .	1,500	.....	Engines 1, 4, & 5, H. & L. 1, and Engine 1 and Hose 4 of Somerville.	Fire in brick-yard.
Monday.....	" 19	4.45 P.M.	17	Michael Flanagan....	Several families	Portland St...	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Over-heated stove set ironed clothes on fire.
Wednesday..	" 28	9.29 P.M.	26	Hovey Heirs	Charles P. Keith....	Main Street...	Trifling...	.....	Engines 2, 3, & 5, H. & L. 1 & 2, Supply Hose 1.	Alarm caused by burning broom-corn in stove in broom-factory.
						Total.....	$ 70,944	$ 46,196		

HYDRANTS.

Located in Ward One.

Appleton Street, corner Highland.
Ash Street, corner Acacia.
Baldwin Street, corner Emmons Place.
Banks Street, corner Flagg.
Banks Street, corner Cowperthwaite.
Banks Street, corner Grant.
Bow Street, corner Linden (post).
Brattle Street, opposite the estates of Messrs. Longfellow and Hastings.
Brattle Street, corner Ash.
Brattle Street, corner Hilliard.
Brattle Street, corner University Press estate.
Brattle Street, corner Lowell.
Brattle Street, corner Fresh Pond Lane.
Brattle Street, opposite Mount Auburn greenhouse.
Brattle Street, front of Mrs. Wyeth's estate.
Brattle Street, corner Willard.
Brattle Street, corner Story.
Brattle Street, corner Channing.
Brattle Street, corner Lakeview Avenue.
Brattle Street, corner Hawthorne (post).
Brattle Street, near Brighton (post).
Brighton Street, corner Winthrop (post).
Brighton Street, corner Eliot (post).
Broadway, junction Cambridge Street.
Broadway, near junction Cambridge Street (post).
Broadway, corner Prescott Street.
Broadway, corner Trowbridge Street.
Broadway, corner Quincy Street.
Broadway, corner Ware Street.
Broadway, corner Ellery Street.
Buckingham Street, opposite Stevens's barn.
Buckingham Street, corner Concord Avenue (post).
Cambridge Street, corner Trowbridge.
Cambridge Street, corner Sumner.
Cambridge Street, front Scientific School (post).
Cambridge Street, corner Quincy (post).
Cambridge Street, opposite Felton (post).
Cambridge Street, corner Ellery (post).
Chauncy Street, near Garden (post).
Chauncy Street, 500 feet from North Avenue.
Church Street, corner Palmer.
Concord Avenue, junction Waterhouse Street.
Concord Avenue, corner Sparks Street.
Concord Avenue, opposite Craigie Street.
Concord Avenue, cor. Follen Street (post).
Concord Avenue, cor. Sparks Street (post).
Coolidge Avenue, between Mt. Auburn Street and Cambridge Cemetery Gate, (2 posts).
Craigie Street, midway.
Craigie Street, near corner Sparks.
De Wolf Street, near Cowperthwaite.
Divinity Avenue, opposite Museum.
Dunster Street, corner South.
Dunster Street, corner Mt. Auburn.
Dunster Street, near Harvard Square (post).
Eliot Street, in elbow (post).
Eliot Street, corner Winthrop (post).
Ellery Street, corner Main.
Ellery Street, east side, midway between Broadway and Cambridge Street.
Elmwood Avenue, midway (post).
Everett Street, south side, midway between North Avenue and Oxford Street.
Fayerweather Street, corner Brattle.
Fayerweather Street, opposite Reservoir.
Foster Street, corner Brown (post).
Garden Street, near Chauncy (post).
Garden Street, corner Mason.
Garden Street, corner Wallace.
Grant Street, corner De Wolf.

Harvard Square, opposite Charles River Bank (post).
Harvard Street, corner Remington.
Harvard Street, opposite Harvard Block.
Harvard Street, opposite Linden (post).
Harvard College Grounds (three posts).
Hawthorne Street, corner Acacia (post).
Kirkland Street, near Baldwin, south side.
Kirkland Street, corner Trowbridge, south side.
Kirkland Street, corner Irving, south side.
Kirkland Street, corner Sumner, south side.
Kirkland Street, corner Quincy, south side.
Kirkland Street, opposite Memorial Hall.
Lakeview Avenue, 500 feet from Brattle Street.
Lakeview Avenue, near Brattle Street (post).
Lakeview Avenue, corner Huron Street (post).
Lakeview Avenue, on hill (post).
Lakeview Avenue, near Engine House (post).
Langdon Street, in elbow (post).
Main Street, junction Harvard.
Main Street, corner Trowbridge.
Main Street, opposite Bay.
Main Street, near Baptist Church.
Mellen Street, corner Oxford.
Mill Street, corner Charles River.
Mt. Auburn Street, corner Brighton (post).
Mt. Auburn Street, corner Brewer.
Mt. Auburn Street, opposite Athens.
Mt. Auburn and Bow Streets.
Mt. Auburn Street, opposite De Wolf.
Mt. Auburn Street, corner Willard (post).
Mt. Auburn Street, corner Sparks (post).
Mt. Auburn Street, opposite McDonald's Marble Works.
Mt. Auburn Street, near railroad stables, in Belmont.
Mt. Auburn Street, near Lowell (post).
Mt. Auburn Street, corner Dunster (post).
Mt. Auburn Street, corner Holyoke (post).
Mt. Auburn Street, corner Athens (post).
Mt. Auburn Street, corner Banks (post).
Mt. Auburn Street, corner De Wolf (post).
Mt. Auburn Street, corner Story (post).
Mt. Auburn Street, corner Hilliard (post).
Mt. Auburn Street, opposite City Building (post).
Mt. Auburn Street, near car-stables, in Belmont (post).
Mt. Auburn Street, opposite Brewer (post).
Mt. Auburn Street, opposite Bath (post).
Mt. Auburn Street, near Coolidge Lane (post).
Mt. Auburn Street, corner Elmwood Avenue (post).
Mt. Auburn Street, corner Channing (post).
Murray Street, near Charles River.
North Avenue, corner Chauncy Street.
North Avenue, corner Shepard Street (post).
North Avenue, corner Holmes Place.
North Avenue, corner Jarvis Street.
North Avenue, front of burial-ground (post).
North Avenue, corner Church Street.
North Avenue, corner Garden Street (post).
Oxford Street, near Jarvis.
Oxford Street, corner Everett.
Phillips Place, corner Berkeley Street.
Prescott Street, corner Harvard.
Prescott Street, between Harvard Street and Broadway (post).
Putnam Avenue, corner Western Avenue.
Putnam Avenue, between Mt. Auburn and Main (post).
Putnam Avenue, corner Flagg Street (post).
Putnam Avenue, opposite Putnam Court (post).
Putnam Avenue, near Hews Street (post).
Putnam Avenue, corner Sands Street (post).
Quincy Street, midway between Harvard and Broadway (post).
Sands Street, opposite Planing Mill.
South Street, corner Dunster (post).
Sparks Street, corner Vassal Lane (post).
Sparks Street, corner Foster (post).
Sparks Street, opposite Charles T. Russell's.
Trowbridge Street, midway between Main and Harvard (post).
Waterhouse Street, opposite Follen (post).
Wendell Street, near Carver (post).
Willard Street, corner Foster (post).
Worthington Street, near Engine House Water-Works (post).

Located in Ward Two.

Amory Street, corner Summer.
Antrim Street, near Broadway.
Antrim Street, near Cambridge (post).
Antrim Street, midway (post).
Austin Street, corner Essex (post).
Austin Street, corner Prospect (post).
Austin Street, corner Temple (post).
Bigelow Street, midway between Main and Harvard.
Brewery Street, near Hastings (post).
Bristol Street, corner Portland (post).
Broadway, corner Highland Avenue.
Broadway, corner Third Street.
Broadway, corner Hancock Street.
Broadway, corner Antrim Street.
Broadway, corner Tremont Street (post).
Broadway, corner Elm Street.
Broadway, corner Dock Street.
Broadway, corner Dana Street.
Broadway, corner Ellsworth Avenue.
Broadway, corner Fayette Street.
Broadway, corner Amory Street.
Broadway, corner Norfolk Street.
Broadway, corner Boardman Street.
Broadway, opposite Thayer's Laboratory.
Broadway, near Broadway House.
Broadway, corner Clark Street (post).
Broadway, corner Third Street (post).
Broadway, corner Davis Street (post).
Broadway, corner Brewery Street (post).
Broadway, opposite Mason & Hamlin's building (post).
Broadway, near Sixth Street (post).
Broadway, corner Pioneer Street (post).
Cambridge Street, corner Harding.
Cambridge Street, corner Norfolk.
Cambridge Street, corner Willow.
Cambridge Street, corner Prospect.
Cambridge Street, corner Tremont.
Cambridge Street, opposite Fayette.
Cambridge Street, north side, near Springfield.
Cambridge Street, opposite head of Maple Avenue.
Cambridge Street, corner McCabe (post).
Cambridge Street, corner Elm (post).
Cambridge Street, corner Winsor (post).
Cambridge Street, near Mr. Rafferty's house (post).
Cambridge Street, nearly opposite Ellsworth Avenue (post).
Centre Street, opposite Dana School-house.
Clinton Street, near G. T. Gale's house (post).
Columbia Street, corner Washington.
Columbia Street, corner Lincoln.
Columbia Street, corner Market.
Columbia Street, corner Hampshire.
Columbia Street, corner Harvard.
Dana Street, corner Chatham (post).
Davis Street, corner Broadway.
Elm Street, opposite Lincoln (post).
Elm Street, corner Market.
Essex St., westerly side, midway between Harvard and Austin.
Fayette Street, 500 feet from Broadway.
Hampshire Street, corner Amory (post).
Hampshire Street, near Somerville line (post).
Hampshire Street, corner Portland (post).
Harvard Street, corner Pine.
Harvard Street, corner Hancock.
Harvard Street, corner Clark.
Harvard Street, corner Dana.
Harvard Street, corner Moore.
Harvard Street, corner Norfolk.
Harvard Street, corner Portland.
Harvard Street, corner Brewery.
Harvard Street, corner Clinton.
Harvard Street, near R. R. crossing (post).
Harvard Street, between R. R. crossing and Brewery Street (post).
Harvard Street, opposite Davis (post).
Harvard Street, corner Cherry (post).
Harvard Street, corner Winsor (post).
Harvard Street, opposite Elm (post).
Harvard Street, corner Essex (post).
Harvard Street, corner Prospect (post).
Harvard Street, between Prospect and Inman Streets (post).
Harvard Street, corner Bigelow (post).
Harvard Street, corner Lee (post).
Highland Avenue, east side, midway.
Houghton Street, cor. Bolton, in Somerville.

Hunting Street, 400 feet from Cambridge.
Inman Street, near Austin.
Inman Street, corner Harvard.
Inman Street, corner Broadway.
Inman Street, corner Summer.
Jefferson Street, corner Harding.
Jefferson Street, corner Warren (post).
Lee Street, midway between Main and Harvard Streets (post).
Main Street, corner Lee.
Main Street, corner Hancock.
Main Street, corner Dock (post).
Main Street, corner Essex.
Main Street, opposite Pleasant.
Main Street, corner Bigelow.
Main Street, junction Harvard.
Main Street, corner Pioneer (post).
Main Street, opposite Rawson & Hittinger's.
Main Street, opposite Pearl (post).
Main Street, Gale & Wood's driveway (post).
Maple Avenue, midway between Broadway and Cambridge Street.
Market Street, corner Union.
Moore Street, head of Hastings.
Norfolk Street, corner Hampshire.
Norfolk Street, corner Worcester.
Norfolk Street, head of Washington (post).
Oak Street, west side, near Somerville line.
Plymouth Street, corner York.
Portland Street, opposite Rolling-Mill (post).
Prospect Street, opposite B. Tilton's.
Prospect Street, corner Broadway.
Prospect Street, corner Hampshire.
Prospect Street, corner Main.
Prospect Street, corner Gardner.
Prospect Street, opposite school-house, Somerville.
Prospect Street, corner Webster Avenue, Somerville.
Seekel Street, corner Webster Avenue (post).
South Street, opposite Willow, Somerville.
South Street, corner Gore, Somerville.
Tremont Street, near Wellington's house (post).
Tremont Street, near Cambridge (post).
Tremont Street, opposite Gardner (post).
Union Street, corner Hampshire.
Ward Street, corner Horace, Somerville.
Webster Avenue, corner Elm.
Webster Avenue, corner Bristol.
Webster Avenue, corner Winsor.
Webster Avenue, corner Hampshire.
Webster Avenue, corner Plymouth.
Webster Avenue, corner Cambridge Street (post).
West Boston Bridge.
West Boston Bridge.
West Street, midway (post).
Winsor Street, corner Lincoln.
Winsor Street, corner Hampshire.
Winsor Street, corner Washington.
Winsor Street, near Somerville line (post).
Winsor Street, corner Broadway (post).

Located in Ward Three.

Bridge Street, corner Prison Point.
Bridge Street, corner Short.
Bridge Street, corner Short (post).
Bridge Street, corner Water.
Bridge Street, opposite Bay State Glass-house.
Bridge Street, near Bay State Glass-house (post).
Bridge Street, north side, opposite Braman, Shaw, & Co.'s.
Bridge Street, opposite Fourth (post).
Bridge Street, between Short and Water (post).
Bridge Street, near Cambridge (post).
Bridge Street, corner Water (post).
Bridge Street, corner East (post).
Cambridge Street, opposite First.
Cambridge Street, corner Carson.
Cambridge Street, corner Daily's Alley.
Cambridge Street, corner Third.
Cambridge Street, junction Bridge.
Cambridge Street, corner Sixth.
Cambridge Street, near railroad crossing (post).
Cambridge Street, opposite Seventh (post).
Cambridge Street, opposite No. 141 (post).

Cambridge Street, near Third (post).
Cambridge Street, corner Fourth (post).
Charles Street, corner Fourth.
East Street, corner North (post).
Eighth Street, corner Cambridge.
Fifth Street, corner Winter (post).
Fifth Street, corner Charles.
Fifth Street, corner Spring.
Fifth Street, corner Cambridge.
Fifth Street, corner Gore.
First Street, corner Spring (post).
Fourth Street, corner Winter (post).
Fourth Street, corner Winter.
Fourth Street, corner Cambridge.
Fourth Street, corner Vine.
Fourth Street, corner Thorndike.
Gore Street, corner Fourth.
Gore Street, corner Carson (post).
Gore Street, corner Carson.
Gore Street, corner Seventh (post).
Gore Street, between Fourth and Fifth (post).
Gore Street, between Fifth and Sixth (post).
Munroe Street, corner Third (post).
North Street, corner East.
North Street, near Glass Company's cutting-shop.
Otis Street, corner First.
Otis Street, corner Third.
Otis Street, corner Seventh.
Otis Street, corner Ninth.
Potter Street, corner Ninth (post).
Prison Point Street, 50 feet north of Ice Sheds.
Prison Point Street, on railroad track, 300 feet from Street.
Prison Point Street, on railroad track, 600 feet from Street.
Prison Point Street, 400 feet from Bridge Street.
Prison Point Street, near Bridge (post).
Prison Point Street, near Ice House (post).
Second Street, corner Thorndike.
Second Street, corner Otis.
Second Street, corner Cambridge.
Sixth Street, corner Gore.
Sixth Street, corner Potter.
Sixth Street, corner Charles (post).
Spring Street, corner Second.
Spring Street, corner Third.
Spring Street, corner Fourth.
Third Street, corner Vine.
Third Street, near Charles (post).
Third Street, corner Bridge (post).
Third Street, corner Potter.
Third Street, opposite Gas-Works (post).
Thorndike Street, corner Sixth.
Thorndike Street, corner Fifth.
Thorndike Street, near Woodbury's mill (post).
Thorndike Street, corner Second (post).
Vine Street, corner Fifth.
Vine Street, corner Sixth.
Water Street, near Sugar-house.
Yard of J. P. Squire & Co. (post).

Located in Ward Four.

Austin Street, corner Douglass (post).
Austin Street, corner Norfolk (post).
Blackstone Street, west side, 100 feet from Avenue.
Brookline Street, corner Allston.
Brookline Street, corner Hamilton.
Brookline Street, corner Valentine.
Brookline Street, corner Putnam Avenue.
Brookline Street, corner Erie.
Brookline Street, corner Franklin.
Brookline Street, corner Chestnut.
Brookline Street, near Henry (post).
Brookline Street, corner Decatur (post).
Brookline Street, corner Lopez (post).
Brookline Street, corner Watson (post).
Cherry Street, opposite Eaton.
Chestnut Street, corner Pearl.
Columbia Street, corner Austin.
Cottage Street, corner Pearl (post).
Eaton Street, corner Pine (post).
Erie Street, corner Pearl (post).
Erie Street, between Pearl and Brookline (post).
Fairmont Street, corner Andrew (post).
Franklin Street, corner Soden.
Franklin Street, corner Hancock.
Franklin Street, corner Bay.
Franklin Street, near the hill.

Franklin Street, corner Sydney.
Franklin Street, corner Magazine.
Franklin Street, corner Pleasant.
Franklin Street, near Putnam Avenue (post).
Front Street, junction State.
Front Street, corner Columbia (post).
Green Street, opposite Vernon.
Green Street, corner Putnam Avenue.
Green Street, corner Hancock (post).
Green Street, corner Bay (post).
Green Street, midway between Hancock and Vernon (post).
Green Street, corner Vernon (post).
Green Street, corner Pleasant (post).
Green Street, corner Western Avenue (post).
Green Street, corner Pearl (post).
Green Street, corner Brookline (post).
Hews Street, corner Putnam Avenue.
Kinnaird Street, corner Bay (post).
Magazine Street, corner Cottage.
Magazine Street, corner Putnam Avenue.
Magazine Street, corner Warland.
Magazine Street, corner Auburn.
Magazine Street, corner Park.
Magazine Street, corner Upton.
Magazine Street, opposite Hamilton.
Magazine Street, corner Florence.
Magazine Street, corner Green (post).
Main Street, corner Harrison (post).
Main Street, corner Columbia.
Main Street, corner Winsor.
Main Street, corner Norfolk.
Main Street, junction Austin.
Main Street, north side, opposite Kennedy's bakery.
Main Street, corner Washington.
Main Street, corner Brewery.
Main Street, corner Portland.
Osborn Street, corner State (post).
Osborn Street, corner Main (post).
Pacific Street, corner Sydney.
Pacific Street, near Albany.
Pearl Street, corner Lake.
Pearl Street, corner Putnam Avenue.
Pearl Street, corner Decatur.
Pearl Street, corner Auburn.
Pleasant Street, corner Florence (post).
Pleasant Street, corner Upton.
Pleasant Street, corner Somerset.
Pleasant Street, corner Park.
Pleasant Street, corner Prince.
Pleasant Street, corner Pleasant Place.
Pleasant Street, corner Chestnut.
Pleasant Street, corner Franklin (post).
Portland Street, corner Main (post).
Putnam Avenue, opposite Ballard Place (post).
Putnam Avenue, near River Street (post).
Putnam Avenue, corner River Street (post).
Putnam Avenue, corner Walnut Court (post).
Putnam Avenue, corner Pleasant (post).
Putnam Avenue, between River and Pleasant Streets (post).
River Street, corner Franklin.
River Street, opposite Cottage.
River Street, opposite Laurel.
River Street, corner Blackstone.
River Street, opposite Fairmont.
School Street, corner Clark.
School Street, corner Portland (post).
School Street, corner Clark (post).
School Street, corner Moore (post).
Sydney Street, corner Allston.
Sydney Street, corner Putnam Avenue.
Sydney Street, corner Chestnut.
Sydney Street, corner State (post).
Sydney Street, corner Green (post).
Soden Street, corner Western Avenue.
Somerset Street, corner Andrew (post).
State Street, opposite Village (post).
State Street, near Howe's Factory (post).
Washington Street, corner Brewery (post).
Washington Street, corner Clark.
Washington Street, corner Portland (post).
Washington Street, corner Moore (post).
Waverly Street, opposite Willard's.
Western Avenue, corner Howard Street.
Western Avenue, corner Kinnaird Street.
Western Avenue, corner Jay Street.
William Street, between Magazine and River Streets (post).

Located in Ward Five.

Arlington Street, 500 feet from North Avenue (post).
Beech Street, east side, 20 feet from Orchard.
Belmont Street, corner Montgomery (post).
Cedar Street, corner Spruce.
Cedar Street, opposite Norris.
Cedar Street, opposite Hotel.
Concord Avenue, corner Madison Street.
Concord Avenue, opposite Bond Street.
Concord Avenue, corner Walden Street.
Concord Avenue, opposite Eames's estate (post).
Cogswell Avenue, corner Mead Street.
Crescent Street, corner Sacramento (post).
Donnell Street, corner Garden.
Dublin Street, 525 feet from Spruce.
Dublin Street, 620 feet from Walden.
Dublin Street, corner Walden.
Dublin Street, corner Sargent.
Dublin Street, corner Railroad.
Fairfield Street, opposite Mr. Whitney's.
Forest Street, corner Frost.
Garden Court, corner Dublin.
Garden Street, opposite Bond.
Harris Street, corner Forest (post).
Harvey Street, opposite Montgomery.
Hollis Street, in the elbow.
Hubbard Avenue, opposite brick block.
Hubbard Avenue, corner Raymond Street.
Lambert Avenue, corner Walnut Avenue (post).
Linnæan Street, corner Avon.
Linnæan Street, corner Bowdoin.
Linnæan Street, corner Raymond.
Milk Street, corner White.
Milk Street, near Somerville line (post).
Montgomery Street, 300 feet from Harvey (post).
Mt. Vernon Street, corner North Avenue (post).
North Avenue, near Railroad Bridge.
North Avenue, corner Coggswell Avenue.
North Avenue, corner Allen Street.
North Avenue, corner Dover Street.
North Avenue, 300 feet west of Tannery.
North Avenue, corner Sacramento Street.
North Avenue, opposite Linnæan Street.
North Avenue, corner Chester Street.
North Avenue, corner Arlington Street.
North Avenue, corner Rice Street.
North Avenue, corner Cedar Street.
North Avenue, opposite Tannery.
North Avenue, near Walcott Richardson's gate.
North Avenue, corner Beech.
North Avenue, corner Frank Street (post).
North Avenue, corner Day Street.
North Avenue, near Blake's blacksmith-shop (post).
Norton Street, midway.
Orchard Street, near Davenport (post).
Orchard Street, opposite Tenney Court.
Oxford Street, corner Forest.
Oxford Street, opposite Eustis Court.
Oxford Street, corner Sacramento.
Pemberton Street, 500 feet from North Avenue (post).
Pemberton Street, corner Fairfield (post).
Raymond Street, south side, near Mr. Dresser's estate (2).
Reed Street, 250 feet from Harvey.
Reed Street, opposite school-house.
Rice Street, opposite L. L. Cushing's.
Richdale Avenue, corner Raymond Street.
Richdale Avenue, near Raymond Street (post).
Roseland Street, corner Frost.
Shepard Street, corner Avon.
Spruce Street, corner Hollis.
Spruce Street, corner Jackson (post).
Spruce Street, corner Reed.
Spruce Street, corner Montgomery.
Spruce Street, corner North Avenue.
Spruce Street, opposite school-house.
Spruce Street, corner Clay.
Spruce Street, corner Clifton.
Tannery Street (3), between North Avenue and Almshouse (posts).
Tuttle Street, opposite Ladd's barn.
Walden Street, corner Mead.
Walden Street, corner Hubbard Avenue.
Wallace Street, in the elbow.
Washington Avenue, corner Dexter.
Washington Avenue, corner Foxcroft Street.
Wyeth Street, corner Garden.

RESERVOIRS.

Located in Ward One.

Bow Street, centre of Square.
Brighton Street, corner Eliot.
Cambridge Street, nearly opposite Sumner.
College Yard.
Garden Street, north end of Appian Way.
Junction Garden Street and Concord Avenue, opposite Arsenal.
Kirkland Street, opposite Oxford.
Main Street, corner Dana.
Mt. Auburn Street, opposite the church.

Located in Ward Two.

Broadway, head of Tremont.
Cambridge Street, corner Webster Avenue.
Essex Street, corner Austin.
Harvard Street, opposite burial-ground.
Harvard Street, head of Cherry.
Harvard Street, corner Davis.
Harvard Street, corner Prospect.
Main Street, junction Broadway.
Norfolk Street, midway between Broadway and Hampshire.
Prospect Street, 175 feet north of Broadway.
Washington Street, corner Cherry.

Located in Ward Three.

Cambridge Street, 70 feet east of Third.
Gore Street, corner North Third.
Junction Bridge and Gore Streets.
New England Glass Company's Yard.
Otis Street, corner Fourth.
South Sixth Street, corner Spring.
Thorndike Street, corner Third.
Under New England Glass Company's building.
Under Lowell R. R. Machine Shop.

Located in Ward Four.

Austin Street, corner Douglass.
Brookline Street, corner Auburn.
Junction Western Avenue and Pleasant Street.
Main Street, corner Austin.
Main Street, corner Brookline.
Main Street, junction Western Avenue and River Street.
Main Street, front of Universalist Church.
Pearl Street, corner Franklin.
School Street, corner Cherry.
Washington Street, corner Pine.

Located in Ward Five.

North Avenue, near Engine House No. 4.
In Square, opposite Porter's Hotel.

REPORT

OF

THE SUPERINTENDENT OF STREETS.

To the Honorable City Council of the City of Cambridge.

Gentlemen, — I herewith submit for your consideration a report of operations in, and matters relating to, the Street Department for the financial year ending November 30, 1877, of which Department I have held, since April 1, 1877, the position of Superintendent.

The appropriations for the year were

	Streets.	Paving.	Bridges.
	$ 75,000.00	$ 17,000.00	$ 8,000.00
Expended prior to April 1	31,884.52	1,042.22	3,799.37
Leaving for balance of year	$ 43,115.48	$ 15,957.78	$ 4,200.63

The original appropriation for Streets was . . .	$ 75,000.00
Reinforced by transfer from appropriation for Paving	8,246.68
	$ 83,246.68

The expenditures have been as follows: —

Gravel	$ 19,798.27
Stone	6,852.60
Labor with men and teams . . .	39,824.99
Iron-work and repairs on carts . .	1,476.47
Hay and grain	4,358.65
Lumber	271.20
Horse-shoeing	765.35
Horse	350.00
Amount carried forward . . .	$ 73,697.53

Amount brought forward	$73,697.53	
Advertising	27.75	
Glass, etc.	6.75	
Sign-painting	40.50	
Stable supplies	328.69	
Moving fences	154.11	
Belting	33.67	
Hardware	241.57	
Roller	300.00	
Trees on Brattle Street	214.35	
Horse doctoring and medicine	116.93	
Superintendent's salary, G. L. Cade	1,025.00	
Superintendent's salary, S. P. Shepherd	900.00	
Car-tickets	10.00	
Damages by widening streets	118.00	
Books	7.25	
Pung	50.00	
Tools and repairs	296.47	
Harnesses and repairs	243.87	
Dies	5.25	
		$77,817.69
Balance unexpended		$5,428.99

Under this expenditure the accepted streets of our city have been kept in general good order, many having been graded and gravelled during the year. Some of the more recently accepted streets will require grading during the coming season.

I desire to call attention to the necessity of securing an ample supply of gravel of quality suited to use in the grading of streets. That used during this year has been purchased at a cost of ninety cents to one dollar per yard, delivered on the streets as wanted; at this cost it is perhaps as cheap as it can be in any way obtained, but there is continually existing the uncertainty of obtaining suitable material and securing its delivery to best advantage.

I would therefore recommend that the city purchase a gravel-bank containing material suitable for use on our streets.

I recommend an appropriation of $75,000 for streets for the coming year.

The following streets have been accepted during the year: —

Name.	Date.	Width.	For what Distance.
	1877.	Feet.	
Hews Street . . .	May 23	40	From Howard Street to a point 185 feet easterly from house opposite southeasterly line of Kelly and McKinnon.
Somerset Street .	May 23	30	Pleasant Street to Putnam Ave.
Magee Court . .	May 23	40	Hews Street to southeast line of John McCody.
Mt. Pleasant Street	June 20	40	Walden Street to Dexter Street.
Second Street . .	June 20	50	Spring Street to south line of American Net and Twine Co.
Everett Street . .	June 20	50	North Avenue to Oxford Street.
Vine Street . . .	June 20	50	Fourth Street to Sixth Street.
Davenport Street .	Sept. 20	35	Elm Street, Somerville, to land of Dr. Putnam, Ward 5.
Salem Street . .	Sept. 20	27	Auburn Street to Watson Street (formerly Auburn Court).
Banks Street . .	Sept. 20	40	Flagg Street to Sands Street.
Allston Street . .	Nov. 8	40	Brookline Street to Waverly Street.
Regent Street . .	Nov. 8	40	North Avenue to Fitchburg R. R.
Valentine Street .	Nov. 8	40	Pearl Street to Brookline Street.

The following streets have been widened and laid out during the year: —

Name.	Date.	Width.	For what Distance.
	1876.	Feet.	
Putnam Avenue .	Dec. 20		Corner rounded at Western Avenue.
	1877.		
Sparks Street . .	July 18	40	Vassal Lane to Concord Avenue.

Appropriation for paving		$17,000.00	
Transferred to streets . .	$8,246.68		
Transferred to widening streets	25.00		
		$8,271.68	
			$8,728.32
Expended as follows: —			
Labor with teams		$1,038.50	
Gravel		939.90	
Labor		4,958.59	
Paving-stone		111.25	
Sand		175.25	
			$7,223.49
Balance unexpended			$1,504.83

To meet the demand for general care and repairs in paving for the coming year, I recommend an appropriation of $15,000 as being sufficient. I desire to call your attention to the matter of paving Main Street with block paving. This is one of our principal thoroughfares, and has to bear a large share of the heavy teaming between our city and Boston, and under the present system of macadamizing it is difficult to keep it in good order, and the constant repairs required necessitate an annual expenditure which in a few years would equal the cost of block paving. The work can be apportioned through the next few years; and I recommend the appropriation of $25,000 the coming year to be used in paving Main Street with stone blocks, commencing at or near Third Street.

Appropriation for bridges		$8,000.00
Expended as follows:—		
Lumber	$1,935.89	
Labor	3,728.31	
Iron-work	65.27	
Hardware	67.34	
Painting and oil	51.75	
Printing	2.00	
Fuel	3.00	
Sea-wall and stone	705.46	
Brookline pier	1,245.00	
		$7,804.02
Unexpended balance		$195.98

The Cambridge Great Bridge will have to be rebuilt the coming year to make it safe for public travel.

The River Street bridge will require thorough repairing the coming season; and should the street be widened, as contemplated by an order now before the City Council, it would be advisable to widen the bridge to conform thereto.

Brookline Bridge pier has been rebuilt at a cost of $1,445. The bridge will require new planking, as only a portion has been planked as recommended the previous year. The other bridges under my care are in good repair.

I think that an appropriation of $8,000 will be required to repair and keep in order the bridges for the coming year.

The regular force employed by the City in the Street Department is fifty men and twenty-six horses.

Schedule of Property belonging to the Street Department.

Utensils for work on streets	$ 538.00
Twenty-four horses	7,200.00
Six double harnesses	360.00
Three wagon harnesses	100.00
Fourteen chain harnesses	280.00
Ten saddle harnesses	230.00
Thirty collars	150.00
Seventeen carts	2,150.00
One caravan	150.00
Set of runners	75.00
Plough	5.00
Stable furniture	50.00
Nine snow-ploughs	270.00
Stone-crusher and steam-engine	4,000.00
Five street-rollers	1,350.00
Five sleds	350.00
One large wagon	125.00
Ten thousand brick	100.00
Twelve hundred yards of cracked stone	2,400.00
Stone for cracking	400.00
Railroad track on Cambridge Street	770.00
Three express-wagons	300.00
Spruce lumber	210.00
Lot of round and square paving-stone	413.00
Lot of edgestone and corners	185.00
	$ 22,161.00

Respectfully submitted,

S. P. SHEPHERD,
Superintendent of Streets.

REPORT

OF

THE CHIEF OF POLICE.

OFFICE OF THE CHIEF OF POLICE,
CAMBRIDGE, Dec., 1877.

TO THE HONORABLE CITY COUNCIL OF CAMBRIDGE.

GENTLEMEN, — I have the honor to submit the Annual Report of the doings of the Police Department for the year ending November 30, 1877: —

Whole number of arrests		1,572
Males	1,402	
Females	170	
Residents	1,299	
Non-residents	273	
Adults	1,385	
Juveniles	187	

Food and lodging have been furnished at the several station-houses to 4,865 persons, of whom 4,624 were males and 241 females.

The following table will show the causes for which arrests have been made: —

Assault and battery	209	Common drunkard	14
Assault on an officer	10	Cruelty to animals	5
Assault felonious	5	Concealing mortgaged property	2
Adultery	1	Drunkenness	544
Attempt to break and enter	2	Disturbing the public peace	60
Aiding in maintaining a nuisance	1	Disturbing a public school	6
Breaking and entering	36	Embezzlement	3
Bastardy	11	Evading car-fare	1
Being present at an exhibition of the fighting of animals	4	Escaped prisoners	2
		Fraud	5

Highway robbery	1	Selling mortgaged property	2
Insanity	24	Selling obscene literature	2
Larceny	130	Stubborn children	6
Larceny from building	17	Stealing a ride	3
Larceny from the person	4	Selling fireworks without license	1
Lewd and lascivious persons	3	Surrendered by bail	3
Malicious mischief	39	Truancy	2
Obtaining goods by false pretences	5	Violation of the liquor law	112
On capias	10	Violation of the Sunday law	11
Peddling without license	14	Violation of the dog law	19
Perjury	2	Violation of the city ordinances	98
Rape	5	Violation of the lobster law	2
Receiving stolen property	6	Vagrancy	77
Refusing to assist an officer	1	Wilful trespass	31
Rescuing a prisoner	1	Walking on railroad track	6
Setting bonfires	2		
Suspicious persons	12	Total	1,572

The following table shows a portion of the miscellaneous work of this Department: —

Amount of property reported stolen	$19,548.00
Amount recovered	1,509.00
Accidents where the injured parties were assisted	51
Alarms of fire given by officers	15
Dead bodies found and cared for	5
Dead bodies recovered by grappling	2
Defects in streets reported	206
Defects in water and gas pipes	45
Dogs killed	327
Disturbances suppressed	79
Fires extinguished without alarm	5
Intoxicated persons assisted home	71
Infants found and cared for	4
Lost children returned to friends	97
Stray teams taken care of	21
Search-warrants for liquor served	332

Portions of this Department have attended all fires, and arrangements are made to insure the attendance of such a number of officers as may be needed on such occasions for the security of property in peril, and for the maintenance of good order.

Total cost of the Department for the year: —	
Appropriation	$ 67,000.00
Expenditures: —	
Pay of Chief	$ 1,850.00
Sundry officers' services	60,685.03
Fuel for station-houses	1,081.15
Bills of Cambridge Gas Light Co.	952.94
Horse-keeping	515.00
Horse-shoeing	405.50
Repairs of station-houses	330.57
Repairs of vehicles and harness	166.04
Supplies for station-houses	338.81
Carriage-hire	77.50
Repairs of telegraph lines and instruments	51.63
Medical attendance	94.00
Travelling expenses of officers	191.50
Incidental expenses, including cost of buttons, billies, etc.	476.18
Total	$ 66,850.85
Amount paid into treasury on account of services of warrants, fees, etc.	4,759.90
Balance showing actual cost	$ 62,090.95

The numerical strength of the force remains the same as last year, but in accordance with the recommendations of my report of last year its organization has been changed by the appointment of six sergeants, two of whom are detailed to assist Captain Hagar in his general supervision of the night force, three others being in charge of the stations during the hours when the captains are not on duty, and one at North Cambridge having general charge (under Captain Ames) of the station at that place.

The recommendations made by me last year for the passage of an Ordinance specifying the qualifications (so far as age and physical condition are concerned) necessary to render an applicant eligible to become a member of this force, I again renew.

A vigorous effort has been made during the past year for the enforcement of the Liquor Law, one officer having been detailed expressly for this purpose; he has worked with the other officers

at any and all times, for the suppression of unlicensed places and the regulation of those that were licensed, and the efforts of all the officers have been so successful that I have no hesitation in saying that there is not within the limits of this city an unlicensed place where a stranger can purchase a glass of intoxicating liquor. This work has been prosecuted in the face of threats (from many who were supposed to have influence) that the time of the officers was short, that the first of the year would see a change, and other men would occupy their positions, etc. In looking over this state of things I can come to but one conclusion, which is, that the officers should be made independent in their positions, by their appointment during good behavior, instead of annually as at present.

During the month of September last the vault of the Cambridgeport Savings Bank was entered, and a number of boxes deposited there for safe-keeping were removed. These boxes contained U. S. Bonds to the amount of about $ 13,000, and other securities of an indefinite value; in my report of property stolen, I have called the whole amount $ 18,000; aside from this the loss of property has been small. In regard to the manner of the removal of the boxes various theories have been started; and although I myself am satisfied as to the parties who got them, no legal evidence has as yet been obtained, and the principal in the matter has, it is thought, left the country. It is but justice to state that the parties in interest in the loss took a different view of the matter from what I did, and have been working through other channels; but, so far as I have learned, with the same success.

The Police Stations of the City are in good order and a credit to the city, alterations having been made in the small lock-up at the Lower Port during the year last past, which render it much more convenient and comfortable than it was. Since the first of July of the year last past we have made many prosecutions under the Vagrant Act, on complaint of the Overseers of the Poor, and in many cases tramps have been sentenced to the State Workhouse at Bridgewater; the result of which has been that large numbers of this class have avoided our City, so much so, that while in November, 1876, 539 persons were fed and lodged in the different station-houses, the number has decreased to 237 during the corresponding month of 1877.

The standard of discipline and efficiency of the force, so far as has come under my own observation, and from the information conveyed to me by the captains, — more particularly by Captain Hagar, who has general control of the night force, and who makes weekly written reports to me, — never stood higher.

On the night of the 1st of December, 1876, Officer Calvin C. Smith, while on duty on Main Street, fell into a cellar-way, and received an injury to his back and lower limbs, which has incapacitated him from doing duty; and for a large portion of the time he has been confined to his house and bed. For the last few months he has been able to get about with the help of crutches, but from the best information which I have been able to get, the probabilities are that he will never be able to do police duty again. His name has been borne upon the roster of the Department during the last year, and his place has been filled by the employment of a special officer. Under the circumstances, it would seem to be a necessity for the vacancy to be filled at the annual election in January.

My thanks are due to the officers and members of the Department under my command for a cheerful zeal shown in the performance of all the requirements of duty, to the Departments of our neighboring cities, and to many of our own citizens for assistance given whenever opportunity offered.

Respectfully submitted,

GEORGE H. COPELAND,
Chief of Police.

REPORT

OF

THE SUPERINTENDENT OF LAMPS.

To the Honorable City Council.

Gentlemen, — The undersigned respectfully submits the following Report of the Department of Lighting Streets for the year ending November 30, 1877.

The amount appropriated for the current year was		$24,000.00
The amount expended is as follows: —		
For kerosene, matches, ladders, glass, etc.	$380.65	
For posts, lanterns, and repairs	847.84	
Burners and lamp-post cocks	96.30	
Care of lamps and lighting	5,775.14	
Gas	13,585.92	
Printing	13.25	
Expressage	3.65	
Superintendent's salary	400.00	
Whole amount of expenses		$21,102.75
Leaving balance unexpended		$2,897.25

I would respectfully call the attention of the City Council to the importance of well-lighted streets as a means of safety to those who use them, as well as a means of preventing, in a great measure, the commission of crime.

His Honor, Mayor Willard, in 1850, first publicly called the attention of the City Council to the subject of lighting the streets at the expense of the City. In his address for that year he used the following language: "Hints have been given, sometimes gravely,

and sometimes in a playful way, in favor of lighting the streets at night. The object is a very desirable one, and if some mode could be devised by which the City could give its aid in effecting it without incurring too great expense or causing disaffection in different localities, it would commend itself to the consideration of the Council."

Nothing appears to have been done that year; but the following year (December 16, 1851) Eliphalet Davis and sixty-four others petitioned, "That Main Street, between Harrison and Dana Streets, may be lighted at the expense of the City, the petitioners proposing to erect at their own expense a sufficient number of posts and lamps." The committee to which the petition was referred reported, December 23, "That the prayer of said petitioners ought to be granted upon the condition that the City Government shall direct at what particular points and locations said posts and lamps shall be placed." January 22, 1852, the following order was adopted by the Common Council and concurred in by the Board of Aldermen, February 17: "That, whenever suitable iron posts, lamps, and fixtures are erected at such points on any streets in the City as the Mayor and Aldermen may designate, the Mayor is authorized to cause said lamps to be lighted at the expense of the City."

The rule thus established appears to have been generally adhered to since that time, it being an equitable one both for the City and for the petitioners. The following municipal year, April 5, 1852, his Honor, Mayor Stevens, in his inaugural referred to the subject as follows: "To secure the full advantage of good streets and sidewalks it has been thought necessary that travellers should be able to see them in the night as well as by day. By order of the last City Council authority was granted to light the principal avenues of the City at the public expense, provided the parties more immediately interested would furnish at their own cost suitable iron posts and the necessary fixtures. Preparations have been made by the citizens in various sections of the City to secure this advantage to themselves and to the public. The subject of making provision to carry into effect this projected improvement by a suitable appropriation is recommended to your favorable attention." In accordance with the recommendation of his Honor, an appropriation of one thousand dollars was made for lighting streets, of which $ 651.62 was expended, being the first expenditure made by the City for

that purpose. In 1853 a committee was appointed to ascertain and report the number of street lamps lighted at the expense of the City. They reported, May 3, that the number on the 18th of the preceding April was as follows: —

Ward One	29 gas, 1 fluid.
Ward Two	29 gas, 34 fluid.
Ward Three	20 gas.
Total	113.

In 1854 we learn from the address of his Honor, Mayor Edwards, that "The people generally approve the plan of lighting the streets, as a matter of public and private accommodation and as a means of safety."

In 1855 his Honor, Mayor Raymond, says: "The plan for lighting the streets has been gradually adopted by the citizens, until the main street and many of our more retired streets are now well lighted. The expense required for this object is considerable, but who of our citizens would return to the age of darkness?" The number of lamps and the amount of appropriation now began to require some supervision, and accordingly the office of Superintendent of Lamps was established, September 24, 1856. Since that time no important change has been made in the general management of this Department. The following table shows the expendi-

For the Year ending.	Amount.	No. of Lamps.	For the Year ending.	Amount.	No. of Lamps.
March 1, 1853	$ 651.62	113	Dec. 1, 1865	$ 9,062.24	454
" 1854	3,312.87	—	" 1866	10,790.44	† 515
" 1855	2,987.32	—	" 1867	11,285.95	552
Dec. 1,* 1855	2,123.52	200	" 1868	11,605.70	581
" 1856	3,376.35	225	" 1869	12,723.31	606
" 1857	5,818.60	266	" 1870	13,220.57	632
" 1858	5,196.02	299	" 1871	17,043.29	‡ 599
" 1859	6,188.87	318	" 1872	14,146.69	627
" 1860	6,008.48	350	" 1873	17,075.31	647
" 1861	7,364.35	387	" 1874	20,157.37	709
" 1862	7,200.33	397	" 1875	20,919.04	728
" 1863	8,956.99	430	" 1876	22,366.05	771
" 1864	8,560.10	449	" 1877	21,102.75	790

* Nine months ending December 1, 1855.

† 52 Bridge lamps added this year.

‡ 53 Bridge lamps deducted this year.

tures for lighting streets since the adoption of the present system of lighting at the public expense.

By our system of lighting nearly all the cross streets of the city are left in total darkness after twelve o'clock at night, and complaints are constantly received by me of the difficulty and danger attendant upon travelling these streets after that hour. It is important in this connection to remember, that communication between the different wards is chiefly by these dark cross streets, Third Street being the only cross street communicating with Ward Three, which is kept lighted all night; and when we consider that in case of fire the steamers, hose-carriages, and ladder-trucks of the Fire Department are obliged to traverse these dark streets at a rapid rate, it is surprising that serious accidents are so often avoided. Feeling, as I do, that the interests of the City would be best served by such a course, I respectfully recommend that the lamps on the side streets be lighted and extinguished at the same hours as the lamps on the main streets.

Should the above recommendation be adopted, the extra amount of gas required for the street lamps would be, it is believed, a sufficient inducement for the Gas Company to make a liberal discount from present rates, and with the rate of compensation for the men employed in the Department adjusted to meet the required changes, the estimated expenses of the Department under this plan would be considerably reduced.

By vote of the City Council, May 20, 1876, six lamps were located upon the large Common in Ward One, and ordered to be lighted with kerosene, since which time complaints have been constantly received of the insufficiency of light. This Common embraces an area of upwards of eight acres, and the paths crossing it are used as thoroughfares by the inhabitants of that part of the city.

By vote of the City Council, the Commons in Ward Two and Four are lighted with gas, and I respectfully submit for your consideration, whether the public convenience does not require that this Common, by far the largest in the city, should be lighted with gas also. I would recommend that two additional lamps be located on the Common in Ward One, and that the lamps thereon be lighted with gas.

From the gradual increase in the number of lamps it became necessary in March last to redistrict the city, and to employ an addi-

tional lighter, — and by direction of the Committee on Lamps four districts were laid out containing a nearly equal number of lamps, two men being assigned to each district. This change involves no additional expense, as the men are paid so much per month for each lamp.

The number of lamps in the city is as follows: —

District One,	194	gas,	6	kerosene.	
" Two,	182	"	15	"	
" Three,	174	"	23	"	
" Four,	173	"	23	"	
	723		67	Total . .	790

Nineteen of the above have been added the past year, of which one was erected upon the Common in Ward Four, one on Brookline Bridge, and one on North Avenue, at the expense of the City; the remaining sixteen were erected in various parts of the city, and were paid for by the petitioners for the location. The average cost of each lamp burning gas was $6\frac{1}{5}$ cents per night; of each lamp burning kerosene $1\frac{1}{3}$ cents per night. When I took charge of this Department the cost of gas-burners was $ 9 per dozen, and of lamp-post cocks $ 15 per dozen. By a change in the manner of purchasing, I am able to report the cost of burners is now $ 3 per dozen; of lamp-post cocks, $ 3.24 per dozen. During the year every burner has been graded to burn four feet of gas per hour, and all defective burners have been replaced with Johnson burners, every burner now in use being of that pattern. The Committee on Lamps has tested Robinson's Street Reflector with reference to obtaining more light from a less amount of gas; it has not yet reported upon the result of the experiment. This reflector has been tested at the Institute of Technology with favorable results, and has already been adopted by the city of Lynn.

There has been collected and paid into the City Treasury the sum of eleven dollars for damages to lamp-posts. Seventeen posts have been reset, and one has been replaced by a bracket lamp. In many parts of the City lamps have been located upon streets where there are no edgestones, in consequence of which the posts are exposed to the danger of collision with passing teams, especially where they are located at the corner of two streets, and the expense of repairing

damages from this cause is quite large. I find by personal inspection that there are seventy-one posts thus exposed, and I recommend that suitable measures be taken by the City Council to protect them.

All of which is respectfully submitted,

B. F. NOURSE,
Superintendent of Lamps.

REPORT

OF

THE CITY ENGINEER.

City of Cambridge,
Office of the City Engineer,
December 19, 1877.

To the Honorable the City Council.

Gentlemen, — Agreeable to Section 8, of the City Ordinance relating to City Engineering, I herewith report the expenses and operations of that department for the year ending November 30, 1877.

Streets.

There have been laid out by the City Council for public use the following streets, described in the accompanying table: —

STREETS LAID OUT FROM DECEMBER 1, 1876, TO DECEMBER 1, 1877.

Locality.			Description.				
Name.	From.	To.	Width in feet.	When laid out.	Date of Plan.	By whom.	Length of Street.
Allston Street ...	Brookline Street.....	Waverly Street	40	Nov. 8, 1877.	Aug. 24, 1877.	Arthur Hodges....	818.3
Banks Street....	Sands Street	Flagg Street.....	40	Sept. 20, 1877.	" 20, 1875.	Barbour & Hodges.	904.4
Davenport Street.	Elm Street, Somerville.	Estate of Dr. L. Putnam	35	" 20, 1877.	May 25, 1877.	W. A. Mason.....	421.2
Everett Street...	North Avenue.....	Oxford Street.....	50	June 20, 1877.	" 30, 1876.	W. A. Mason.....	850.0
Hews Street.....	Howard Street.....	Estate of Kelly & McKinnon.	40	May 23, 1877.	April 1877.	City Engineer.....	453.6
Magee Court....	Hews Street.....	Estate of J. B. Cody.....	40	" 23, 1877.	" 1877.	City Engineer.....	430.0
Mt. Pleasant St..	Walden Street.....	Dexter Street.....	40	June 20, 1877.	May 29, 1877.	Arthur Hodges....	584.6
Regent Street....	North Avenue.....	Land of F. R. R. Co.....	40	Nov. 8, 1877.	June 6, 1877.	E. F. Bowker.....	497.7
Salem Street....	Auburn Street.....	Watson Street.....	27	Sept. 20, 1877.	May 25, 1877.	Arthur Hodges....	259.9
Second Street....	Spring Street.....	S. Line Am. Net & Twine Co.	50	June 20, 1877.	April 24, 1875.	Barbour & Hodges.	741.7
Somerset Street..	Pleasant Street.....	Putnam Avenue.....	30	May 23, 1877.	Mar. 27, 1877.	Arthur Hodges....	454.8
Valentine Street .	Pearl Street.....	Brookline Street	40	Nov. 8, 1877.	Oct. 8, 1877.	E. F. Bowker.....	484.4
Vine Street.....	Fourth Street.....	Sixth Street.....	50	June 20, 1877.	June 1875.	City Engineer.....	855.3

This makes an additional area of public streets of 322,323 square feet, and a length of 1.468 miles. Binney Street has been graded, between Portland and Ninth, according to an agreement with the East Cambridge Land Company, and paid for from the appropriation for the Binney Street sewer. Putnam Avenue has been widened at its junction with Western Avenue, by taking 757½ square feet of land from the estate of Horace Hews. Sparks Street has also been widened, between Vassal Lane and Concord Avenue, by land taken from the estates of Royal Stimson, 5,152½ square feet, Patrick O'Brien 1,904 square feet, and Daniel Fitzgerald, 52 square feet, making this portion of the street 40 feet in width. It has been graded and put in good condition. A sea-wall has been built by Messrs. Derry and Edwards, on the easterly side of Prison Point Street, from the Lowell Railroad wall to the Commissioners' line on Miller's River, a license for which was issued by the Board of Harbor Commissioners. A widening is proposed on the northerly side of River Street between Blackstone Street and the City Mills, taking a portion of the old mill-pond; plans for the widenings and plans and specifications for sea-wall and bulkhead have been furnished. Nineteen stone bounds have been set, to define the lines of accepted streets. Lines and grades of streets have been given on ninety applications besides those furnished to the Street Department.

Bridges.

West Boston, Craigie, and Prison Point Bridges, in charge of special commissioners, are all in good condition, Prison Point Bridge having been rebuilt the present season. The bridges over Broad Canal at Sixth and Third Streets are both in good repair. The new pier recommended for Brookline Bridge has been built in a thorough and substantial manner by Mr. Thomas A. Eames. A portion of the bridge has been newly planked: the remaining portion will require it early in the coming season. The River Street bridge will require extensive repairs in the spring. The Western Avenue bridge is in good condition, having been recently rebuilt. The Brighton or "Great Bridge" should be rebuilt as soon as the season opens. The bridges over the Fitchburg Railroad at Walden Street and North Avenue appear to be in good condition: the latter has recently been newly planked in part.

Sewers.

The Binney Street sewer, completed last season, is in good condition, a recent examination of it having been made. Some expenses in connection with its construction have been incurred, such as the payment of the balance due for ballasting, amounting to $3,913.64, and the grading of Binney Street, between Portland and Ninth Streets, under an agreement with the East Cambridge Land Company, in consideration of the withdrawal of certain suits pending against the City. This work was completed at a cost of $3,106.50, making a total for this sewer of $7,020.14, for which an appropriation of like amount was made.

Bridge Street Sewer Outlet.

The present year, the City of Somerville being ready to co-operate with Cambridge, a contract was entered into with Lyman D. Willcutt, Esq., for doing the work as contemplated by the plan prepared by the City Engineer and approved by the Harbor Commissioners last year. The general plan of the extension was that of conveying the sewage in a series of iron pipes, laid side by side to a point where the outer ends would be submerged at low water and where the current had more velocity. The wooden outlet was extended about eight feet, and from a point one half the height of the existing outlet was reduced to a height and spread in width at the outer end, making a chamber suitable to receive the ends of the 14-inch enamelled iron pipes through which the sewage is conveyed. Trap-doors were fitted, which can be opened, when occasion requires, to examine the pipes, or remove any obstruction. Above this point an ordinary flap tide-gate was hung, by which the sewer is relieved in case of heavy storms, when sewage is diluted with storm-water and less objectionable, — the gate opening and discharging when the sewer is more than half full and the tide lower outside; remaining closed at all other times. From the chamber before described, six lines of 14-inch wrought iron enamelled pipes, each 96 feet long, in lengths of 11, 12, and 13 feet, were extended to a point where they would be submerged at low water of spring tides, and have a fall of 2 feet in that distance (96 feet.) The pipes were furnished by the National Tube Works Co. of Boston. The enamel covering is believed to be proof against the action of salt water and sewage. The method of laying the pipes was as follows: After preparing the bed by remov-

ing the mud and refilling with coarse gravel, a temporary stage was erected, the pipes bolted together and suspended from the stringers of the bridge by blocks and falls, the stage planks removed, and the line lowered to its position. Each line was lowered successfully in the same manner. The pipes are laid side by side, and as closely as the flange joints will permit; they were then covered with gravel and ballasted with stone. The connection of the pipes with the chamber was made with concrete between the timber head-pieces. During a heavy storm about fifteen yards of the gravel and stone covering was washed off. It was thought best to remove a portion of the gravel and stone extending to a suitable distance, to prevent a recurrence, and pave and concrete the same, which was done at a cost of $128.32, there being still an unexpended balance which could be used for that purpose.

Since the completion of the work of extending the outlet, in May last, it has been examined often, and has without exception been found clean. The operation has been as expected. In case of storms there has been a discharge from the gate, but ordinarily the flow is through the pipes. Provision has been made for one additional pipe, not laid, and more can be added if required.

The appropriation for the work was $5,000. The total cost, including dredging and concreting, not contemplated, has been $4,850.82.

The work has been done in connection with the City Engineer of Somerville. Five ninths of the cost have been paid by that City, as fixed by the Act under which the Bridge Street sewer was built.

Western Avenue Sewer.

A new sewer has been constructed in this avenue of the enlarged size 42 × 48 inches, commenced last season. From near Blackstone to Jay Street it was located six feet southerly and nearly parallel to the old one, as far as Howard Street, from which point to Jay Street the old sewer was taken up, and the new one built on the old location.

While this part of the work was being done, the sewage was pumped over the intervening work through a 5-inch iron pipe and discharged into the old sewer at Howard Street, a distance of about 250 feet, thus taking care of the sewage without offence to the near residents. In crossing the bed of the old creek near the mill-pond, the marsh and mud were removed to a depth of about twenty-one

feet below the surface of the avenue, and replaced by gravel, well wet and rammed, to the grade line of the sewer. This was done in place of a pile foundation called for in the contract. It is believed to be better, and was done at a considerably less sum than the price for piling. In excavating through the marsh, which has been for many years under the street, a disagreeable gas was emitted, which in some cases affected the eyes of the workmen to such an extent as to render them nearly blind after working in it for more than a few hours at one time. In the clay, at the bottom of the excavation, leaves of oak, maple, and alder were found in a perfect state of preservation, having the natural color of dead leaves.

The length of this sewer was 1419.19 feet, and its cost $ 8,086.15. The work was done under a contract with Lyman D. Willcutt, Esq., in a thorough and satisfactory manner. It has relieved the Franklin Street District, which was greatly in need of a suitable outlet for its drainage.

A number of smaller sewers, ranging in size from eight inches to three feet, have been constructed, the details of which will be found in the accompanying table. Nothing has yet been done in the matter of the Thorndike and First Street sewers, recommended in the last Report. It is, however, a question how long the case can continue as at present existing.

Repairs.

The repair of sewers has, in some instances, been quite large. The sewer in Franklin Street, between Soden and Hancock Streets, which had been rendered useless on account of the filling of the district, has been rebuilt; the old covering stones were removed, the soft mud taken out of the old sewer and replaced to grade by gravel, and a 12-inch Akron pipe sewer laid. New connections were made where old ones had existed, which in many cases had to be carried as far as the cesspools on the premises, requiring some 400 feet of 6-inch pipe for this purpose. The filling was very loose and difficult to hold, full of water, requiring the use of a steam-pump to keep the trench free from water. Total cost, $ 1,070.45. In Webster Avenue, south of Cambridge Street, the sewer was so obstructed as to be inoperative. It was taken up, cleaned, and relaid. By entering the new sewer in Cambridge Street, an additional depth of two feet was gained. It was a 12-inch cement pipe; most of it was

sound. Cost, $ 204.19. In Putnam Avenue, southerly from Western Avenue, the sewer, a 12-inch cement pipe, was badly broken. It was taken up and relaid with a 12-inch Akron pipe. All house and sewer connections were restored. The whole length taken up was 379 feet, and cost $ 519.74. The old pipe was very rotten; only seven pieces of three feet each were found whole. Experience seems to show that such cement pipe as has been furnished to this City is not suitable for clay soils, as most of its failures have been in soils of that nature.

In Pleasant Street, between Putnam Avenue and Somerset Street, the sewer, a 32 × 36 inch brick one, was found to be in a dangerous condition. Some portions, having spread eight inches in the width, and settled from three to fifteen inches from a true grade, have been rebuilt in a thorough and substantial manner, with a plank and timber bottom, a portion taken up having been built on a soft bottom without any artificial foundation. Some of the manholes were badly cracked and without bottoms, and the lower gate needed repairs, all of which have been made, and the whole sewer from Fairmont Street to the lower gate has been thoroughly cleaned. The cost, to November 30, has been $ 1,348.91, including rebuilding, pumping, repairing, and cleaning. For some reason not yet explained, the grade of the sewer from near the lower gate to Fairmont Street is found to be from 10 to 15 inches above that shown on the recorded plans in the office.

Fifty-two new catch-basins have been constructed, under a contract with Mr. Samuel McCulloch, until June 1, 1877, at $ 67.50; from this date at $ 49.99 each. A new plan has been adopted, by which, it is thought, they have some advantages over those previously constructed, and can be built at a less cost.

The cleaning of the manholes and catch-basins has been done by Mr. John Horigan; to May 1, 1877, by the day, and from that date by a contract not yet expired. The amount paid him to November 30 has been, day work, $ 370.50; on the contract, $ 725.00. Total, $ 1,095.50. A recent examination shows that the work has been well done.

For the year 1877, twenty persons have been licensed by the Committee on Sewers and Drains as drain-layers, as follows: Ward One, 5; Ward Two, 8; Ward Three, 2; Ward Four, 4; Ward Five, 1. There have been issued to these parties one hundred and eighty-six permits to enter private drains into the public sewers, as provided by the ordinance.

The ventilation of sewers is at present receiving attention in many of the larger cities. None of our sewers are at present provided with ventilation, but they should receive attention before long.

The additional length of sewers constructed this year is 7500.53 feet, or 1.422 miles, making the total length of sewer in the City 60.766 miles.

The appropriations made for sewers were:

Binney Street sewer	$7,020.14
Bridge Street sewer outlet	5,000.00
Sewers and drains	30,000.00
	$42,020.14

Expended as follows:

Binney Street sewer	$7,020.14
Bridge Street sewer	4,850.82
Sewers as per table, except Bridge Street	13,102.21
Building catch-basins, including connection with the sewers	3,552.49
Care and repair of sewers, including sewer assessments refunded	7,900.53
Cleaning catch-basins on contract to November 30	1,095.50
	$37,521.69
Unexpended balance	$4,498.45

SEWERS CONSTRUCTED FROM DECEMBER 1, 1876, TO DECEMBER 1, 1877.

Location.			Construction.						
Street.	From	To	Contractor.	Material.	Size in inches.	Man-holes.	Inlets.	Length in feet.	Total cost.
Acacia	Ash	Hawthorne	Tim. Murphy, Foreman	Akron	12 diam.	1	16	325.79	$ 409.82 *
Allston Ct.	Allston	Southerly	Samuel McCulloch	Portland stoneware	8 diam.	..	5	131.00	95.89
Brattle	Hilliard	Westerly	Tim. Murphy, Foreman	Akron	12 diam.	..	8	179.50	154.01
Brattle	Brattle Square.	Church	Samuel McCulloch	Brick	12 × 16	1	20	286.00	603.04 †
Bridge St. outlet	Commissioners' line	Easterly	Lyman D. Willcutt	Wood and enamelled iron pipes	.....	..	..	105.00	4,850.82
Chauncy	Garden	Easterly	Samuel McCulloch	Portland stoneware	12 diam.	..	27	562.00	431.81
Church	Brattle	Palmer	Samuel McCulloch	Portland stoneware	12 diam.	..	18	392.00	.....
Hawthorne	Acacia	near Brattle	Tim. Murphy, Foreman	Akron	10 diam.	..	8	141.25	.....
Lake	near Niagara	Westerly	Samuel McCulloch	Portland stoneware	12 diam.	..	11	205.00	127.00
Lowell	Mount Auburn	Charles River	Tim. Murphy, Foreman	Brick, stone, and wood	18 × 20	1	..	505.30	517.40
Niagara	Lake	Northerly	Samuel McCulloch	Portland stoneware	10 diam.	..	1	100.50	71.25
North Avenue	Kirkland	Southerly	Samuel McCulloch	Portland stoneware	8 diam.	..	1	244.00	145.86
Portland	Plymouth	Northerly	Dennis O'Connell	Brick	36 diam.	..	32	420.00	733.96
Prison Point	Commissioners' line	Southerly	Samuel McCulloch	Akron and wood	12 diam.	..	2	398.00	415.92
Prospect	Austin	Southerly	Patrick O'Connors	Akron	12 diam.	..	8	151.5	136.35
Prospect	Harvard	Southerly	Tim. Murphy, Foreman	Akron	12 diam.	..	5	92.9	72.37
Sparks	Manhole	Vassal Lane	Patrick O'Connors	Brick / Akron	12 × 16 / 12 diam.	1	62	349.0 / 507.9	659.47
Third	Binney	near Rogers	Samuel McCulloch	Brick	12 × 16	..	21	323.0	346.04
Webster Avenue	Extension	Southerly	S. McCulloch, Foreman	Cement	10 diam.	..	6	28.5	25.02
Western Avenue	Blackstone	Jay	Lyman D. Willcutt	Brick and invert	42 × 48	5	108	1,419.19	8,086.15
William	Extension	Easterly	S. McCulloch, Foreman	Portland stoneware	12 diam.	..	6	101.00	70.85
SEWERS BUILT BY PRIVATE PARTIES UNDER THE SUPERVISION OF THE CITY ENGINEER.									
Avon Place	Avon Hill	Easterly	.....	Baltimore	8 diam.	..	..	148.40	.....
Salem	Auburn	Southerly	.....	Portland	6 diam.	..	1	125.80	.....
Walnut Avenue	Arlington	Northerly	.....	Vitrified	10 diam.	..	5	258.00	.....
					Total	9	371	7,500.53	$17,953.03

* Includes Hawthorne Street.

† Includes Church Street.

Water-Works.

The collecting basin, or natural filter, in process of construction last year, has been completed by O. P. Roberts, Esq., the contractor for the work. It is an excavation 45 × 50 feet, made in the gravel and sand, near the Little Pond gate-house, walled on the sides, the conduit making the easterly side, and connecting with it by four openings. The excavation is covered with a series of brick arches, footed on iron beams resting on piers, the arches being covered with earth. A manhole in the centre affords access when the water is low. The whole cost, including piling and rebuilding a portion undermined by quicksand, has been $2,195.

At Fresh Pond an incline railway has been built to the coal-shed, by which the coal is taken into the shed for unloading, making a considerable saving in the cost of housing. The Engineer's house has been enlarged by the addition of an L of several rooms, and fitted with modern improvements, all much needed for comfort and convenience.

A dam has been constructed near Wellington Brook gate-house, fitted with flash boards, and so arranged as to take water into the conduit, or allow it to pass through the natural channel of the brook. A flume leading to the conduit, and a protection of sheet piling on both sides of the brook to the culvert, has been made in this connection. The work was done in a faithful and workmanlike manner by Mr. John P. Perkins; the grounds around have been graded under the direction of the Superintendent; the whole appearance is much improved. Ventilation has been arranged for the gate-houses, and perforated iron ventilators placed over the manholes of the conduit. Plans and specifications, when needed, have been prepared for the improvements enumerated.

In September a communication was sent to the Committee on reservoirs and pumping of the Water Board, made at their request, on the sources of pollution affecting our water-supply. The Board will recommend to your notice such portions of the communication as they deem proper. Many of the points noticed, especially on Wellington Brook, and including the Richardson piggery, have received attention by the Superintendent, and have been much improved.

The survey of the ponds, recommended, has not yet been made. I can only urge its importance.

A fishway has been constructed by order of the Fish Commissioners, on a petition from the town of Arlington, at the dam across Alewife Brook at the tide-gates. The work was done by contract by Lyman D. Willcutt, Esq. The cost was $385, and paid for from the appropriation for the extension of the Water-Works, by special order from the City Council.

Cemetery.

Lots have been laid out, grades of avenues, paths, and lots have been given, as required. The unoccupied land is growing less each year. A new map, embracing the whole Cemetery, showing the avenues, paths, and lots, is much needed; the present one not showing the many changes which have been made in the laying out.

Building Ordinance.

The new Building Ordinance, in the form of a circular, has been furnished to all builders, architects, and owners, so far as possible, doing business in this city. Many new buildings have been visited and examined, and a number of changes made where conflicting with the ordinance.

As no one has been specially employed for this duty, it is probable that some violations of the ordinance have occurred.

General Survey.

The General Survey of the city has been continued in a manner so as not to interfere with the other work of the office. The field work is finished, and the large map completed. Three of the sectional maps, embracing areas of about one hundred acres each, have been drawn to a scale of forty feet to an inch, showing each lot, its area, with buildings, where any exist. Three others are in progress, one nearly completed.

In connection with the General Survey, surveys are being made of the property belonging to the city. Abstracts are made of the titles, and such other information as is possible relating thereto is obtained. Thus far forty-two pieces have been surveyed.

Beside the general survey, the work of the office has included making surveys for, and preparing plans, specifications, and superintendence for all new structures in the departments of Sewers, Water-Works, Streets, and Cemetery.

Office.

Six persons have been employed the past year. An appropriation of $ 7,800 was made. There has been expended, including salary of City Engineer, pay of assistants, horse-hire, car-fare, stationery, draughting materials, hardware, stone monuments and setting, stakes, and other supplies, the sum of $ 6,724.87, leaving an unexpended balance of $ 1,075.13. A planimeter has been purchased for the use of the office, and is very useful as a check on calculations.

Mention is here made of the fidelity with which the assistants connected with this office have discharged the various duties intrusted to them.

Respectfully submitted,

WILLIAM S. BARBOUR,
City Engineer.

LIST OF THE SEWERS IN CAMBRIDGE,

WITH THEIR COST AND ASSESSMENT.

THE rule first adopted was to make the assessment in decimals of the value of the property.

Date.	Street.	Cost.	Assessed.	Balance.	Rate.
1845	Austin	$ 1,586.15	$ 1,435.85	$ 130.30	.01 .006 .003
"	Pine	347.72	300.92	46.80	.0065
"	Brattle Square .	198.41	166.90	31.51	.003 .002 .001
1846	Cambridge . .	152.99	151.80	1.99	.0066
"	Otis	34.53	34.45	.08	.0013
1847	Prospect . . .	500.84	500.84	. . . .	Built by owners.
1848	North	559.05	511.50	47.55	
"	Winsor	. . . .	125.72		

In 1850 the rule was adopted of assessing the abutters to the distance of 100 feet from the street line, provided their lots were of that depth. The highest rate per linear foot of sewer would be paid by the abutter whose land was 100 feet or more in depth; if of half that depth, he would pay one half of the highest rate. The assessment being made by the square foot, one having a frontage of 200 feet and a depth of 50 feet would pay the same assessment as one having a frontage of 100 feet and a depth of 100 feet. The rate given in the following table is the *highest rate* which could be assessed for a linear foot of sewer; but without an examination of the plan it is impossible to determine the minimum or average rate paid. The rate is given in cents, and fractions are omitted.

Date.	Street.	Cost.	Assessed.	Balance.	Rate.
1850	Cambridge . .	$ 1,034.03	$ 764.05	$ 269.98	$ 0.50
1851	Hampshire . .	5,800.00	4,349.59	1,450.41	.31
"	Otis	800.00	598.05	201.95	.40
"	Market	600.00	435.36	164.64	.30
"	Cross	1,125.00	837.06	287.94	.30
"	Washington . .	3,550.00	2,595.94	948.06	.40

Date.	Street.	Cost.	Assessed.	Balance.	Rate.
1852	Gore	$ 1,244.00	$ 921.25	$ 322.75	$ 0.50
"	Cherry	603.00	436.24	166.76	.30
"	Main	1,290.50	965.76	324.74	.40
"	Broadway . . .	1,436.46	1,030.52	405.94	.31
"	Baldwin . . .	1,130.50	845.04	285.46	.16
1853	Dunster . . .	1,162.00	795.47	366.53	.50
"	Prospect . . .	407.87	369.73	43.02	.24
"	Tremont . . .	275.00	265.08	9.92	.24
"	Clark	517.32	387.77	129.55	.35
"	Moore	427.00	330.70	96.30	.35
"	Spring	1,753.59	1,278.16	445.43	.50
1854	Brattle	1,235.31	856.30	379.01	.37
"	Quincy	1,362.00	931.10	430.90	.35
"	Cambridge . .	755.56	564.70	190.86	.32
"	Lincoln	696.00	388.42	307.58	.24
"	Austin	205.00	157.85	47.15	.40
1855	Kirkland . . .	900.00	674.09	225.91	.30
"	Austin	1,554.75	1,044.36	510.39	.36
1856	Amory	525.00	245.09	279.91	.24
"	Inman	972.30	572.57	399.73	.24
1855	Thorndike . .	1,781.00	1,335.75	445.25	.85
"	Otis	431.73	287.86	143.87	.51
1856	Thorndike . .	772.00	578.85	193.15	.56
"	Cambridge . .	678.55	508.86	169.64	.37
"	Fayette	206.90	155.03	51.87	.35
"	Prospect . . .	175.70	131.76	43.93	.43
"	Bridge	2,264.98	1,698.40	566.58	.76
"	Lee	1,019.70	764.00	255.70	.41
"	Broadway . . .	388.05	290.81	97.24	.61
"	Quincy	182.17	136.39	45.78	.25
"	Kirkland . . .	537.39	403.39	134.00	.30
"	Norfolk . . .	422.34	316.60	105.74	.41
"	Columbia . . .	786.42	589.79	196.63	.32
"	Remington . .	2,072.81	1,557.58	515.23	.56
"	Harvard . . .	231.30	173.42	57.88	.46
"	" . . .	593.29	593.29	. . . .	.31
"	Pearl	225.71	169.40	56.31	.51
"	Hancock . . .	3,684.19	2,905.09	959.10	.55

When the present City Clerk came into office he recorded the length of the sewer. The following table shows also the average cost per foot of sewer, and average assessment per foot of sewer on each abutter.

Date.	Street.	Length. in feet.	Cost..	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1857	Otis	2,210.00	$2,246.24	$1,684.27	$ 561.97	$ 1.01	$ 0.38
"	Bridge	546.00	587.72	440.76	146.96	1.08	.40
"	Harvard	1,209.00	915.37	686.53	228 84	.75	.28
"	River	1,126.00	864.27	534.67	329.58	.77	.28
"	Prospect . . .	850.00	641.14	480.84	160.30	.75	.28
"	Harvard	1,187.00	1,012.02	758.76	253.26	.85	.32

Date.	Street.	Length in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1857	Winsor	662.00	$ 489.92	$ 367.38	$ 122.54	$ 0.74	$ 0.27
"	Brookline	2,011.00	1,572.25	1,179.16	393.09	.78	.29
"	Sparks	1,230.00	1,311.69	983.77	327.92	1.07	.40
"	Thorndike	325.00	324.25	243.19	81.06	1.05	.37
"	Bath to Garden . .	2,300.00	3,190.78	2,127.19	1,063.59	1.39	.46
1858	Craigie	342.00	241.27	180.85	60.42	.70	.26
"	Washington . . .	310.00	181.93	136.45	45.48	.59	.22
"	Lee	564.00	412.24	309.18	103.06	.73	.27
"	Norfolk	259.00	173.56	130.04	43.52	.67	.25
"	Winsor	330.00	216.11	162.08	54.03	.65	.24
"	Mount Auburn . .	783.00	682.74	512.06	170.68	.87	.32
"	Centre	468.00	372.96	279.72	93.24	.79	.30
"	Mount Auburn . .	280.00	243.28	182.46	60.82	.87	.33
"	Prospect	136.00	88.42	66.31	22.11	.65	.24
1859	Cambridge	1,244.00	1,127.40	567.60	R.R.Co.paid	.90	.22
"	Cambridge	1,816.00	1,805.77	1,354.33	451.44	.99	.37
"	Cambridge & Tremont	1,209.00	1,144.00	1,000.91	143.09	.94	.41
"	Bridge	928.00	943.00	707.04	235.96	1.01	.38
"	Magazine	3,414.00	3,604.49	2,334.25	. . .	1.06	.34
"	Webster Avenue . .	458.00	467.50	300.56	116.94	1.02	.32
1860	Winter	780.00	601.54	451.12	150.42	.77	.29
"	Spring	367.00	303.48	227.56	75.92	.83	.31
"	Pine	1,038.00	583.31	437.46	145.85	.56	.21
"	Union	300.00	195.73	89.96	105.77	.65	.15
"	Austin	522.00	339.61	254.73	84.88	.65	.24
"	Broadway	322.00	251.38	188.54	62.84	.78	.29
"	Broadway	1,776.00	1,446.97	1,085.07	361.90	.81	.30
"	Garden & North Av.	4,369.00	4,685.19	3,513.89	1,171.30	1.07	.40
1861	Vine	316.00	206.00	154.49	51.51	.65	.25
"	North Avenue . .	1,200.00	866.00	736.00	130.00	.72	.34
"	Bay & Green . . .	850.00	764.00	572.98	191.02	.90	.33
"	Trowbridge . . .	581.00	356.00	266.97	89.03	.61	.23
"	Magazine	170.00	156.00	117.00	. . .	.92	.34
1862	Broadway	530.00	339.12	254.34	84.78	.64	.24
1863	Main	622.00	665.00	443.33	221.67	1.07	.35
"	Harvard	414.00	264.00	198.00	66.00	.64	.24
"	Harvard & Clinton .	1,072.00	984.00	738.00	246.00	.92	.34
"	Elm	1,114.50	1,075.00	750.00	325.00	.96	.34
"	Garden & Shepard .	2,272.00	2,292.00	1,719.00	573.00	1.00	.38
1864	Fayette	952.00	1,196.00	897.00	299.00	1.25	.47
1865	Spring	1,287.00	1,304.19	978.13	326.06	1.01	.38
1866	Magazine	1,517.00	2,098.29	1,573.71	524.58	1.38	.52
"	Main	602.00	564.63	499.93	66.64	.94	.42
"	Garden	797.00	1,270.00	952.48	317.52	1.59	.60
"	Broadway	734.00	960.00	720.00	240.00	1.30	.50
"	Avon	151.00	337.00	252.74	84.26	2.23	.84
"	Prospect	226.00	228.00	171.00	57.00	1.00	.38
1867	Columbia	258.00	172.00	129.00	43.00	.67	.25
"	Amory	377.00	395.00	296.25	98.75	1.06	.40
"	Gore	1,193.50	1,970.00	1,477.50	492.50	1.65	.62
"	Washington . . .	150.00	176.00	132.00	44.00	1.17	.44
"	Craigie	162.00	237.52	178.14	59.38	1.46	.55
"	Winsor	179.00	218.00	163.50	54.50	1.22	.45
"	Norfolk & Harvard .	763.00	1,252.60	939.45	313.15	1.64	.61
1868	Inman	580.00	708.57	531.39	177.18	1.22	.46
"	Suffolk	443.00	526.28	394.60	131.68	1.19	.44

Date.	Street.	Length. in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1868	Western Avenue. .	1,267.00	$3,800.52	$1,900.20	$1,900.32	$ 3.00	$ 0.75
"	Pleasant	800.00	998.18	748.63	249.55	1.25	.46
"	Otis	485.00	600.00	450.00	150.00	1.24	.46
"	Chauncy	548.00	629.05	471.79	157.26	1.15	.43
1869	Putnam	1,214.00	1,358.42	1,017.39	341.03	1.12	.42
"	Prison Point . . .	556.00	1,227.65	920.48	307.17	2.21	.83
"	Ellery	486.00	823.40	616.98	206.42	1.70	.63
"	Brookline	384.00	434.57	325.80	108.77	1.13	.43
"	Craigie	325.00	782.89	586.67	196.22	2.40	.90
"	Pearl	607.00	1,155.12	866.18	288.94	1.90	.71
"	Auburn	472.00	730.00	547.44	182.56	1.55	.58
"	Linnæan	1,488.00	2,902.20	2,175.56	726.64	1.95	.73
"	Phillips Place, etc. .	1,852.00	4,164.40	3,122.37	1,042.03	2.25	.84
1870	Broadway & Davis .	1,864.25	6,291.74	3,145.69	3.146.05	3.37	.84
"	Third	240.00	325.91	244.41	81.50	1.36	.51
"	Norfolk	311.00	408.78	306.42	102.36	1.31	.49
"	Franklin	448.00	580.42	435.35	145.07	1.29	.48
"	Charles & Fifth . .	867.00	1,892.21	1,419.39	472.82	2.18	.82
"	Mount Auburn . .	226.00	441.53	331.15	110.38	1.95	.73
"	Market	238.00	388.75	291.44	97.31	1.64	.61
"	Bow	577.00	778.81	584.08	194.73	1.35	.50
"	Bowdoin	847.50	1,389.18	1,041.28	347.90	1.64	.61
"	Soden & Franklin .	981.50	2,383.70	1,787.66	596.04	2.43	.91
"	Winsor	282.00	400.15	299.63	100.52	1.42	.53
"	Norfolk	769.00	1,418.45	1,063.38	355.07	1.84	.68
"	Sydney	682.00	1,334.20	1,008.02	326.18	1.96	.72
"	Harvard	557.80	1,816.49	908.31	908.13	3.25	.81
"	Austin	1,682.00	2,722.10	1,600.49	1,121.61	1.62	.47
"	Linden	440.30	371.51	166.11	205.40	.84	.19
1871	North Avenue . .	6,773.00	36,207.60	6,317.96	30,289.64	5.35	.50
"	Beech	603.00	1,747.50	488.40	1,259.10	2.90	.50
"	Chester	308.00	736.00	223.21	512.79	2.39	.50
"	Columbia	631.00	832.50	540.04	292.46	1.32	.50
"	Kinnaird	282.00	352.50	185.94	166.56	1.25	.50
"	Concord Avenue. .	540.00	681.00	410.00	271.00	1.26	.50
"	Auburn	222.00	277.50	118.41	159.09	1.25	.50
"	Mount Auburn . .	801.50	1,708.70	748.51	960.19	2.13	.50
"	Story	547.00	911.55	375.16	536.39	1.67	.50
"	Hilliard	501.00	819.02	466.50	352.52	1.63	.50
"	Otis	190.00	313.50	567.75			
"	Oxford and branches	See City Engineer's Reports for 1870 – 71.					

The original assessment for the Oxford Street sewer was $ 48,-985.89. The land within 100 feet of the street was assessed at the rate of one cent per square foot, at two thirds of this rate for the next 100 feet, and one third of this rate for the remainder.

Date.	Streets.	Length. in feet.	Cost.	Assessed.	Balance.	Cost. per foot.	Average Assessment per foot.
1872	Charles & Sixth . .	856.10	$1,509.35	$ 695.43	$ 913.92	$ 1.76	$ 0.50
"	Auburn	222.00	277.50	118.41	159.09	1.25	.50
"	Banks, Cowperthw'te, Crane, and Flagg	2,698.75	5,268.73	2,136.21	3,132.52	1.96	.50
"	Inman	324.00	486.00	227.03	258.97	1.50	.50

Date.	Street.	Length in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1872	Shepard	366.00	$ 600.12	$ 367.92	$ 232.20	$ 1.64	$ 0.50
"	Auburn	371.20	477.20	269.53	207.67	1.30	.50
"	Clark	233.00	295.65	133.59	162.06	1.27	.50
"	Farwell Place	333.00	423.00	331.81	91.19	1.27	.50
"	Wright	439.00	559.95	340.67	219.28	1.27	.50
"	Green	441.00	670.50	384.36	286.14	1.52	.50
"	Putnam	630.75	1,101.97	570.40	531.57	1.74	.50
"	Warland	451.00	623.02	336.21	286.81	1.38	.50
"	Webster	426.50	611.33	308.20	303.12	1.43	.50
"	Franklin	214.00	274.10	290.55	. . .	1.28	.50
"	Winsor	230.00	264.50	177.30	87.20	1.15	.50
"	Thorndike	277.00	1,172.78	537.50	635.28	4.23	.50
"	Follen	688.00	1,093.60	421.41	672.19	1.59	.50
"	Oxford, Frost, Forest and Roseland	2,796.00	8,397.40	2,244.55	6,152.85	3.00	.50
"	Pearl, Tufts, and Chestnut	2,532.79	13,509.18	2,645.47	10,863.71	6.12	.50
"	Prescott	150.00	174.30	168.28	6.02	1.16	.50
"	Prospect	237.00	277.05	172.21	104.84	1.16	.50
"	Otis	3,157.50	27,852.49	102.44	25,411.46	8.82	.50
"	Thorndike			115.41			
"	Spring			98.59			
"	Ninth			2,124.59			
"	Langdon	335.00	private.				
"	Lake View Avenue	1,135.00					
"	Tufts	433.00					
"	Chestnut	428.00					
"	Jefferson	210.00					
"	Inman	361.75					
"	Fourth	145.00					
1873	Allston	381.00	612.75	397.06	215.69	1.61	.50
"	Appian Way	505.00	1,054.25	387.98	666.27	2.09	.50
"	Beaver	337.30	433.25	286.12	147.13	1.28	.50
"	Boardman	112.00	155.95	116.42	39.53	1.53	.50
"	Brattle	207.80	422.50	211.70	210.80	.78	.50
"	*Brewery	376.00	4,713.02	239.00	4,474.02	12.54	.50
"	*Brewery	227.20	1,519.03	139.00	1,380.03	6.68	.50
"	*Brighton	368.00	990.76	322.64	668.12	2.69	.50
"	*Carver	185.00	262.20	89.50	172.70	1.42	.50
"	Cedar	1,200.70	3,941.55	1,064.21	2,877.34	3.28	.50
"	Columbia	248.75	337.37	175.32	162.05	1.35	.50
"	Concord Avenue	2,733.37	18,867.70	. . .	18,867.70	6.90	.50
"	Cottage	367.20	425.60	305.44	120.16	1.16	.50
"	Crescent	240.50	259.50	234.57	24.93	1.08	.50
"	De Wolf	383.60	564.20	403.25	160.95	1.47	.50
"	*De Wolf	110.75	452.92	. . .	452.92	4.09	.50
"	*Dyke	280.00	1,145.08	185.55	959.53	4.09	.50
"	*East	256.78	639.33	204.31	435.02	2.45	.50
"	Eighth	156.00	163.85	111.65	52.20	1.05	.50
"	*Eliot	486.00	1,307.34	323.41	983.93	2.68	.50
"	Ellery	470.50	721.75	498.29	223.46	1.53	.50
"	Erie	348.00	448.00	318.90	129.10	1.28	.50
"	Fairfield	125.00	250.00	. . .	250.00	2.00	.50
"	*Fairmont	367.50	607.00	345.17	261.83	1.65	.50
"	Frank	450.00	692.00	450.00	242.00	1.53	.50

* Average cost of system.

Date.	Street.	Length in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1873	Franklin	370.90	$ 700.50	$ 361.30	$ 339.20	$ 1.89	$ 0.50
"	Franklin	476.70	615.93	406.25	209.68	1.29	.50
"	Gardner	266.00	377.10	136.17	240.93	1.41	.50
"	Gore	133.50	400.50	. . .	400.50	3.00	.50
"	Gore	461.00	670.90	367.29	303.61	1 45	.50
"	Green	992.60	1,359.30	955.78	403.52	1.37	.50
"	*Harvard	3,025.00	37,923.66	576.70	37,346.96	12.54	.50
"	Hastings	1,826.14	1,895.59	875.53	1.020.06	1.04	.50
"	Hastings	55.50	72.98	29.71	43.27	1.31	.50
"	*Holyoke	278.00	502.21	296.91	205.30	1.81	.50
"	Kent	398.00	836.55	337.93	498.62	2.10	.50
"	Lopez	423.50	409.40	336.65	72.75	.97	.50
"	*Main	2,020.72	13,510.27	1,733.68	11,776.59	6.68	.50
"	*Mill	377.00	681.04	302.00	379.04	1.81	.50
"	*North	214.30	305.02	134.75	170.27	1.42	.50
"	Pioneer Place . .	190.00	231.31	. . .	231.31	1.22	.50
"	*Pleasant	2,773.00	14,003.07	2,631.72	11,371.35	5.05	.50
"	Pleasant Place . .	357.50	587.35	310.16	277.19	1.64	.50
"	Prescott	150.00	174.30	. . .	174.30	1.16	.50
"	Prospect	237.00	277.05	. . .	277.05	1.17	.50
"	Prospect	148.50	186.00	133.57	52.43	1.26	.50
"	Sydney	95.00	290.44	. . .	290.44	3.06	.50
"	*Sixth	657.25	8,239.78	576.70	7,663.08	12.54	.50
"	Somerset	299.00	421.65	231.58	190.07	1.41	.50
"	*South	167.50	451.00	212.95	239.05	2.69	.50
"	Spruce	498.00	1,647.75	1,031.12	616.63	3.31	.50
"	Village	206.30	264.50	210.54	53.96	1.28	.50
"	Vine	348.50	448.50	266.09	182.41	1.28	.50
"	Webster Avenue .	835.35	2,521.54	747.21	1,774.33	3.02	.50
"	Webster Avenue .	325.50	420.87	237.10	183.77	1.29	.50
"	*Wendell	263.30	383.55	270.69	112.86	1.46	.50
"	Western Avenue .	357.00	465.30	. . .	465.30	1.30	.50
"	Belmont	262.40	} private.				
"	Chestnut	425.00					
"	Erie	273.00					
"	Prince	164.00					
"	Water-Works . .	555.00					
1874	Appleton	152 00	360.11	. . .	360.11	2.37	.50
"	Ash Court	245.90	305.08	236.90	68.18	1.25	.50
"	Athens	22.00	190.95	. . .	190.95	8.63	.50
"	*Avon Hill	628.90	1,048.24	546.84	501.40	1.83	.50
"	Bennett	374.40	360.70	320.66	40.04	.96	.50
"	Brattle	574.50	1,526.00	483.42	1,042.58	2.66	.50
"	Brewery	224.00	285.45	194.47	90.98	1.27	.50
"	Bridge	3,137.24	154,932.38	$\frac{5}{9}$ paid by Somerville.	68,858.84	49.38	.50
"	Brown	429.00	338.91	356.06	−17.15	.79	.50
"	Cambridge	152.00	333.36	110.30	223.06	2.19	.50
"	Cambridge	1,328.50	8,218.50	1,055.51	7,162.99	6.19	.50
"	Charles	259.75	909.12	. . .	909.12	3.50	.50
"	Chestnut	658.80	848.75	576.57	281.18	1.29	.50
"	Columbia	189.75	219.85	136.78	83.07	1.16	.50
"	Crane	26.00	190.95	. . .	190.95	7.34	.50
"	Decatur	446.20	416.59	364.60	51.99	.93	.50
"	*Donnell	560.60	1,416.50	459.95	965.55	2.53	.50
"	*Dublin	3,742.75	29,861.42	3,545.17	26,316.25	7.98	.50

* Average cost of system.

Date.	Street.	Length in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1874	Everett	756.00	$ 965.33	$ 669.40	$ 295.93	$ 1.28	$ 0 50
"	*Fairmont	504.80	3,026.55	390.66	2,635.89	6.00	.50
"	Fayerweather	1,919.50	1,579.88	996.68	583.20	1.55	.50
"	Fifth	231.00	336.22	1,132.50	336.22	1.46	.50
"	Flagg	76.50	145.65	. . .	145.65	1.90	.50
"	Forest	137.50	345.55	½ paid by Somerville.	172.78	2.59	.50
"	Foster	377.70	627.40	298.23	329.17	1.66	.50
"	Fourth	168.00	255.55	82.91	172.64	1.55	.50
"	*Foxcroft	299.80	547.42	341 79	205.63	1.83	.50
"	Franklin	461.50	586.43	387.27	99.16	1.27	.50
"	Front	150.00	112.29	. . .	112.29	.75	.50
"	*Garden	281.80	712.04	266.55	445.49	2 53	.50
"	Green	318.70	429.10	258.46	170.64	1.35	.50
"	*Harding	560.25	1,233.74	516.96	716.78	2.20	.50
"	Harvard	410.00	580.60	276 43	304.17	1.42	.50
"	Hastings	115.50	129.95	117.00	12.95	1.12	.50
"	Hayes	597.30	691.00	528.67	162.33	.77	.50
"	*Holly	395.30	918.82	302.60	616.22	2.32	.50
"	*Hunting	540.70	1,190.66	539.82	650.84	2.20	.50
"	Jay	373.70	427.22	274.55	152.67	1.14	.50
"	*Jefferson	576.20	1,268.92	555.56	713.36	2.20	50
"	Kinnaird	300.80	337.48	213.46	124.02	1.12	.50
"	*McCabe	222.50	489.97	185.25	304.72	2.20	.50
"	Mill	109.00	165.15	. . .	165.15	1.51	.50
"	Mount Auburn	72.00	75.95	. . .	75.95	1.05	.50
"	*Mount Pleasant	509.60	1,261.46	443.62	817.84	2 46	.50
"	Orchard.	1,223.90	1,997.82	1,115.25	882.57	1.63	.50
"	*Osborn	246.50	346.55	138.42	208.13	1 41	.50
"	Park	465.00	502.00	374.94	127.06	1.08	.50
"	Perry	370.50	445.80	274.14	171.66	1.20	.50
"	*Pilgrim	267.25	564.52	385.58	178.94	2.11	.50
"	Plymouth	342.80	382.15	330.32	51.83	1.11	.50
"	*Porter	585.00	1,288.25	549.91	738.34	2.20	.50
"	*Reservoir	228.30	574.00	266.90	307.10	2.51	.50
"	*River	486.45	2,916.52	492.06	2,424 46	6.00	.50
"	Rockwell	345.50	405.80	260.77	145.03	1.17	.50
"	Sands	420.60	435 35	417.14	18.21	1.04	.50
"	*Second	501.80	1,405.76	167.00	1,238.76	2.80	.50
"	Seventh	145.80	154.60	89.34	65.26	1.06	.50
"	*Sydney	128.00	270.38	200.16	70.22	2.11	.50
"	Sydney	260.00	427.65	. . .	427.65	1.64	.50
"	*Spruce	2,975.73	23,741.77	2,863.69	20,878.08	7.98	.50
"	*State	570.50	802.18	659 47	142.71	1.41	.50
"	*Tuttle	567.00	1,432.68	627.19	805 49	2.53	.50
"	Valentine	396.50	378.77	348.59	30.18	.96	.50
"	*Walden	440.00	1,111.78	303.35	808.43	2.53	.50
"	*Walden	1,961.30	4,854.99	1,753.32	3,101 67	2.46	.50
"	*Warren	493.25	1,086.21	396.76	689.45	2.20	.50
"	Webster Avenue	569.90	981.75	660.94	320.81	1.72	.50
"	Willard	543.70	1,772.00	419.10	1,352.90	3.26	.50
"	William	103.00	288.45	. . .	288.45	2.80	.50
"	*Willow	100.20	220.65	58.87	161.78	2.20	.50
"	*Wyeth	627.00	1,078.30	528.02	550.28	1.72	.50
"	Charles	369.25	private.				

* Average cost of system.

Date.	Street.	Length. in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1874	Distillhouse . . .	294.00	private.				
"	Frisbie Place . . .	908.00					
"	Green	64.50					
1875	Allston	220.70	$ 250.25	$ 215.05	$ 35 20	$ 1.13	$ .50
"	Banks	243.70	279.77	254.47	25.30	1.15	.50
"	Cambridge	2,167.82	9,103.33	1,634.20	7,469.13	4.20	.50
"	College Wharf . .	274.00	483.48	. . .	483.48	1.76	.50
"	Elmer	424.38	494.06	361.28	132.78	1.16	.50
"	Flagg	185.42	212.00	158.63	53 37	1.14	.43
"	Franklin	346.90	734.75	237.13	497.62	2.12	.34
"	Garden	163.00	187.22	164.38	22.84	1.15	.50
"	Green	328.80	380.79	295.10	85 69	1.16	.45
"	*Hancock	240.20	1,445.28	177.20	1,268.08	6.02	.51
"	Inman	1,112.90	2,188 62	1,332.91	855.71	1.97	.50
"	*Jay	742.75	4,468.76	957.10	3.511.66	6.02	.51
"	*Kinnaird & priv. land	797.20	1,186.55	63.00	1,123.55	6.02	.51
"	Kinnaird	677.75	1,081 26	464.03	617.23	1.60	.34
"	Lakeview Avenue .	1,424.55	2,778.66	. . .	. . .	1.91	
"	Main	637.50	1,934.67	848.84	1,085.83	3.03	.67
"	North Avenue . .	362.90	563.68	. . .	563.68	1.55	.50
"	Putnam Avenue . .	253.10	461.86	276.60	185.26	1.82	.50
"	Putnam Avenue . .	505.50	583.80	476.12	107.68	1 15	.50
"	Seventh	140 00	161.90	132.96	28.94	1.16	.47
"	South	121.00	137.29	80.16	57.13	1.13	.33
"	Spring	151.70	169.44	43 43	126.01	1.12	.50
"	Sparks	523.60	931.30	728.65	203.25	1.78	.50
"	Tremont	278.35	337.16	288.38	40.78	1.21	.52
"	Wallace	708.85	1,298.04	1,011.37	286.67	1.83	.50
"	Bristol	132.00	private.				
"	Distillhouse . . .	206.00					
"	Fifth	753.00					
"	Seckel	192.90					
1876	Allston	112.50	117.98	105.60	12.38	1.05	.47
"	†Binney	6,249 88	139,167.94	6,052.41	133,115.53	22.27	.48
"	Bay	198.00	401.60	14.69	386.91	2.03	.03
"	Chauncy	66.50	76.34	. . .	76.34	1.15	
"	Franklin	394.80	441.06	252.77	188.29	1.12	.32
"	Franklin	65.00	53.15	. . .	53.15	.82	
"	First	149.00	269.45	. . .	269.45	1.81	
"	Florence	522.90	1,047 38	673.60	373.78	2.02	.64
"	Garden	200.00	228.40	176.83	51.57	1.14	.44
"	*Madison Street, and Concord Avenue	600.00	929.90	712.94	216.96	1.55	.59
"	Mount Auburn . .	195.50	173.52	141.06	32.46	.89	.36
"	Prescott	314.00	274.76	231.84	42.92	.87	.37
"	Portland & Plymouth	565.50	1,174.40	745.08	429.32	2.08	.66
"	Putnam Avenue . .	770.80	1,254.75	968.34	286.41	1.63	.63
"	Sparks Street Court	515.00	566.06	466.85	99.21	1.10	.45
"	Western Avenue .	302.20	2,391.00	. . .	2,391.00	7.92	
"	——— Place . . .	79.50	private.				
1877	*Acacia & Hawthorne	467.04	409.82	275.86	133.96	.88	.30
"	Allston Court . . .	131.00	95.89	. . .	95.89	.73	
"	Brattle	179.50	154.01	99.32	54.69	.86	.28
"	*Brattle & Church .	678.00	603.04	397.28	205.76	.89	.29
"	Bridge St. (outlet)	105.00	4,850.82	. . .	4,850.82	46.20	

* Average cost of system.

† Exclusive of ballasting, dredging Broad Canal, and grading Binney Street.

Date.	Street.	Length in feet.	Cost.	Assessed.	Balance.	Cost per foot.	Average Assessment per foot.
1877	Chauncy	562.00	$ 431.81	$ 189.72	$ 242.09	$ 0.77	$ 0.17
"	Lowell	505.30	517.40	. . .	517.40	1.02	
"	*Lake	205.00	127.00	128.24	1.24	.62	.31
"	Niagara.	100.50	71.25	. . .	71.25	.71	
"	North Avenue . .	244.00	145 86	. . .	145.86	.60	
"	Portland	420.00	733.96	430.00	303.96	1.75	.51
"	Prospect	151.50	136 35	81.02	55.33	.90	.27
"	Prospect	92.90	72.37	40.92	31.45	.78	.22
"	Prison Point . . .	398 00	415.92	. . .	415.92	1.04	
"	Sparks	856.90	659.47	509.56	149.91	.77	.30
"	Third	323.00	346.04	192.25	153.79	1.07	.30
"	Webster Avenue .	28.50	25.02	. . .	25.02	.88	
"	Western Avenue .	1,419.19	8,086.15	. . .	8,086.15	5.69	
"	William	101.00	70.85	65.40	5.45	.70	.32
"	Avon Place . . .	148.40	} private.				
"	Salem	125.80					
"	Shawmut Avenue .	258.00					

* Average cost of system.

REPORT

OF THE

COMMISSIONER ON BRIDGES BETWEEN BOSTON AND CAMBRIDGE.

The Commissioner for West Boston, Canal, and Prison Point Bridges submits for himself and associate his Seventh Annual Report of matters pertaining to the West Boston and Canal Bridges and his Second Annual Report on Prison Point Bridge.

West Boston Bridge.

With the exception of the ordinary repairs, but little has been done to this bridge during the past year.

The wooden pavement between the horse-railroad tracks has been replaced to some extent by granite blocks. New gas-lanterns have been substituted for old ones on the Cambridge end of the bridge, and the Superintendent's house has been shingled and repaired.

The bridge is now in good order, except that the fences need painting.

Canal or Craigie's Bridge.

The extension of the Bridge Street sewer in accordance with the plan of Mr. Barbour, City Engineer of Cambridge, was made early in the year. No damage was done to the substructure of the bridge, and the work as completed tends to increase the stability of the pile piers.

A settlement has been effected with Mr. Clark B. Wood for land taken and damages occasioned by widening the bridge in 1874.

The total amount paid was $ 2,116.12; of which sum Cambridge paid one half. The sum for which suit was brought was $ 25,000.

Only the ordinary repairs have been made on this bridge during the year, and it is now in good condition, except that the wood-work of the superstructure needs painting.

Superintendent Smith of this bridge has, as for the last two years, kept an account of the amount and kind of freight passing through the bridge during the year. His statement, which is valuable for its statistical information, will be found appended.

Prison Point Bridge.

This bridge, which at the date of the last Report was in process of reconstruction, was opened for public travel on Saturday, January 20; having been closed for a period of eighty-eight days.

A final estimate was not given until June 27, 1877, although the work was practically completed May 22, 1877.

The entire cost of reconstruction has been $ 19,254.04.

A new house for the Superintendent is very much needed, and the Commissioners propose to build one in the spring. No other outlay, except for the ordinary cost of maintenance, will be required, unless in case of accident.

EZRA PARMENTER,
Commissioner for Cambridge.

Number of Times the Draw in West Boston Bridge has been opened during the Year.

December, 1876	77
January, 1877	0
February	10
March	44
April	123
May	206
June	200
July	264
August	180
September	163
October	160
November	158
Total for the year	1,585

CHARLES W. BLANEY, *Superintendent.*
JOHN McNULTY, *Engineer.*

Number of Times the Draw in Canal Bridge has been opened during the Year.

December, 1876	116
January, 1877	10
February	56
March	80
April	196
May	384
June	342
July	314
August	334
September	364
October	320
November	276
Total for the year	2,792

A. W. SMITH, *Superintendent.*

Number of Times the Draw in Prison Point Bridge has been opened during the Year.

December, 1876	0
January, 1877	3
February	3
March	12
April	25
May	48
June	48
July	65
August	40
September	30
October	50
November	49
Total for the year	373

NATHANIEL E. STORY, *Superintendent.*

Statement of the Amount and Kind of Freight which passed through Canal Bridge during the Year, from December 1, 1876, to December 1, 1877.

Coal	140,886 tons.
Lumber	1,974,384 feet B. M.
Gravel	121,470 tons.
Stone	206,055 "
Wood	7,335 cords.
Lime	33,821 bbls.
Brick	3,089 M.
Piles	2,654
Posts	2,100
Hay	371 tons.
Iron	1,519 "
Sulphur	190 "

A. W. SMITH, *Superintendent.*

The expenses of the City of Cambridge for the care and maintenance of West Boston, Canal, and Prison Point Bridges for the year were as follows: —

Commissioner's salary	$ 500.00
Superintendents, assistants, and others	2,233.97
Rebuilding Prison-Point Bridge, including engineering and inspection	9,398.26
Fuel, gas, and oil	1,153.45
Repairs and materials	533.34
Watering bridges	275.00
Lumber	269.79
Supplies and sundries	266.65
Iron-work	177.18
Paving and material	155.75
Total	$ 14,963.39

Amount of appropriation	$ 16,000.00
" expended	14,963.39
Balance	$ 1,036.61

REPORT

OF

THE TRUSTEES OF THE DANA LIBRARY.

In submitting their Twentieth Annual Report, the Trustees of the Dana Library first return to the City Council their thanks for the prompt response to the appeal for funds, made in the Report of last year, which enabled the Trustees to adopt the necessary measures for the improvement of the Library which were suggested in that Report.

The lease of the Library rooms having expired, the Trustees secured further accommodation by adding two apartments upon the same floor, thus increasing, by more than one third, the area of the rooms; and the whole was hired for the term of five years from May 1, 1877, at a rent of one thousand dollars a year, free of taxes; the lessors agreeing also to heat with steam to the satisfaction of the Board. This mode of heating is a very great improvement upon the old (which was by stoves), for we not only secure additional floor space, but are relieved from the dust and other discomforts inseparable from maintaining several fires. The dust was found to be an injury to the books. The new lease does not at all increase the current expenses of the Library; for while the rent, pro rata for the space occupied, is no more than before, the cost of the additional room is saved in the items of fuel and taxes. All the apartments have been fitted, and such alterations made as seemed necessary to meet the public want. We have heard no other opinion than that of unqualified approbation of the change. We do not anticipate any material increase in the expense of maintaining the rooms during the continuance of the lease; nothing beyond providing against the wear of incessant use.

The Library was closed for three weeks in the month of May, in order to refit and repair. Advantage was taken of the occasion to call in the books and ascertain our condition. This had not been

done for two years. All the books were returned except thirty-eight; thirty-two of these have been replaced at an expense of about twenty dollars, and six are out of print and cannot readily be found. The missing books were mostly juveniles, and of comparatively little value. Since the Library was reopened, all but four volumes are accounted for; two of these are probably lost, and the remaining two, it is thought by the Librarian, will be secured.

In our last Report we stated to the City Council that the annual circulation of the Library, so far as known, had become as great, relatively, as that of any other in the State, with one exception. The circulation for 1876 was nine times greater than the whole number of our books; that for 1877 is in nearly the same proportion; for though the number issued is above a thousand less, yet had not the Library been closed for three weeks, we should have shown an increase. The numbers are large enough, however, in either year. The mere increase of issues is not an object in itself to be striven for. The gross circulation of any library is by no means a proper standard by which to judge of its usefulness. Its prosperity should not be measured by the number of books given out, but by the character of those books. As the legitimate work of an institution of this kind is to educate and improve all that come within its influence, care should be taken to provide reading of so diversified a character as to invite and attract individuals from the varied walks of life; for the public library is the ally and supplement of the public school. It appears from the reports of many institutions like our own that have reached us, that a large majority of readers prefer works of fiction. Such is our experience. While this desire is gratified, care should be taken that different tastes be met by furnishing books of the more substantial sort. Youths of both sexes are a large majority of those who use public libraries, and they almost invariably first give their attention to light reading; but in time they become surfeited, and turn to that which is more instructive and elevating in its tendency, and which has a more enduring influence upon their minds. In making our selections, therefore, we have endeavored not to give too much prominence to works of imagination, but have provided largely books of travel, biography, science, and general literature, encyclopædias, and works on art, for which there is a constantly increasing demand.

We believe that the Library is appreciated, and will become more

and more valued by the community. It is now resorted to by almost all classes of our people; and the deliveries show a growing interest on the part of those who require reading of the more useful and instructive character. We desire to see this Library a complete storehouse of information, where all may find something to satisfy their mental wants; where the mechanic, the artist, the professional man, the youth just freed from school, adults of both sexes, in every department and calling of life, may gain both pleasure and advantage, if they will avail themselves of the opportunities here made ready to their hand.

PAIGE'S HISTORY OF CAMBRIDGE.

The City Council purchased five hundred copies of this work, and, reserving such portion as was thought proper for distribution, passed an order in these words: —

"*Ordered,* That the remaining copies be delivered to the Trustees of the Dana Library for distribution and exchange, principally for similar works and histories; said Trustees to make a detailed report of such distribution to the City Council in their annual report." Under this order one hundred and fifty-four copies were delivered at the Library. One only has been disposed of, and that in exchange for a copy of the History of Pittsfield, Mass.

The distribution contemplated by the City Council will necessarily be slow. To secure the best results it is desirable that it should be so. This Library is now in possession of most of the town histories of Massachusetts and other New England States. In the future others will appear, and when published can be secured. Others that have been published are now out of print, and cannot be found except at rare intervals.

It will be the endeavor of the Trustees to fulfil the wishes of the City Council. There can be no doubt that, in time, the Library will be much enriched by means of this donation.

Statistics of the Year.

Number of books given out in 1877: —

First Quarter	24,430
Second Quarter	16,159
Third Quarter	18,188
Fourth Quarter	22,464
Total	81,241

Average per day	284
Largest issue for any day (November 3)	607
Largest issue for any month (January)	9,000
Books re-covered	6,360
Books replaced, including those lost and worn out	100
Number of volumes belonging to the Library	9,838

Accessions.

Number of books added by purchase	724
Number of books added by gift	70
Total	794

Of those given to the Library, 8 volumes were from the United States; 16 from the State of Massachusetts; 8 from the Cambridge Society for Medical Improvement; 1 from Dr. Benjamin B. Appleton; 31 from Mr. Tracy Howe, and 6 from the City of Cambridge.

Number of subscribers for the year	1,469
Whole number on the books	7,460

This item represents all, or nearly all, who have used the Library within four years. The number in September, 1875, was 3,323. It will be seen that more than 4,000 have been added since that time.

Receipts.

Sales of Catalogues	$32.00
Fines, and sales of waste-paper	98.20
Total	$130.20

which has been placed in the City Treasury.

The fund of one thousand dollars, given to the Library by the late Isaac Fay, Esq., the income of which is to be applied annually for the purchase of books, is invested in the City's note. The income for the current year — sixty dollars — has been expended as directed by the donor.

Visitors to the Reading-Room.

First Quarter	2,996
Second Quarter	2,261
Third Quarter	2,947
Fourth Quarter	3,267
Total	11,471

Number of visitors in 1876	9,865
Increase this year	1,606

Expenses.

Salaries, — Librarian, Assistants, Superintendent of Reading-Room, Janitor, and Helpers permanent and temporary		$1,698.54
Rent, taxes, and insurance		1,115.90
Books, periodicals, and newspapers		959.95
Alterations, repairs, bookcases		760.19
Gas and fittings		360.71
Fuel, water-rates, etc.		60.36
Floor and stair coverings		210.78
Rebinding and repair of books		466.64
Printing and advertising		263.55
Furniture and repairs		88.15
Stationery, stamps, and sundry petty expenses		57.96
Total		$6,042.73
Appropriation	$6,500.00	
Amount of expenses	6,042.73	
Balance unexpended	$457.27	

Bills were incurred in the month of November, chiefly for books, to an amount sufficient to absorb this unexpended balance. But as the City's financial year closes with that month, it was thought proper to carry those demands into the work of the coming year. The amount, therefore, — $457.27, — lapsed into the Treasury, and we were deprived of the full benefit of the appropriation. This result makes not the least practical difference to either the Library or the City. But as the figures stand, it appears that the Trustees did not use *all* that was allowed them, an idea they would disavow, for they could have used all and more, to advantage, had it been within their reach. The Trustees ask, therefore, that the sum of $6,500 be set apart for the use of the Library for 1878, — $6,000 for current expenses, and the remainder to provide for the bills spoken of above.

Respectfully submitted,

FRANK A. ALLEN,
HERSEY B. GOODWIN,
GEORGE F. PIPER,
JOHN S. MARCH,
EDWARD P. TUCKER,
Trustees.

REPORT

OF

THE TRUSTEES OF THE DOWSE INSTITUTE.

To the Honorable City Council of Cambridge: —

The Board of Trustees of the Dowse Institute respectfully submits an attested copy of the Annual Report of its Treasurer, which contains an exact account of the receipts and expenditures of the Board for the year 1876 – 77.

The course last season was given in Union Hall, and consisted of lectures by J. M. Bailey, Henry Ward Beecher, Edward S. Morse, Wendell Phillips, E. C. Bolles, James Parton; of readings by R. R. Raymond, Nella F. Brown; of drawings by W. M. R. French; of a concert by Brignoli, the Temple Quartette, and Miss Kellogg; and of an opera by the Boston Lyceum Opera Company.

Respectfully submitted,

JOHN C. DODGE,
FRANK A. ALLEN,
W. W. WELLINGTON,
W. A. BULLARD,
PEREZ G. PORTER,
Board of Trustees.

Cambridge, December 31, 1877.

REPORT

OF THE

TRUSTEES OF THE BRIDGE CHARITABLE FUND.

The Trustees of the Bridge Charitable Fund respectfully submit their First Annual Report, as follows: —

This fund was created under the following Deed of Trust, which was presented to the City Council by the Hon. John Sargent, September 6, 1876, to wit: —

Deed of Trust.

Whereas Levi Bridge of Cambridge, in the County of Middlesex, and Commonwealth of Massachusetts, has heretofore at sundry times given to the Hon. John Sargent of said Cambridge divers sums of money, which, with accrued interest, now amount to the sum of seven hundred and seventy-three dollars and ninety-five cents, which sums of money the said Sargent has deposited in his name as Trustee of Levi Bridge, in the Cambridgeport Savings Bank as per book No. 1215: —

Now, know all men by these presents, that said sums of money were given, and any other sums which may hereafter be given by said Bridge to said Sargent, and deposited as aforesaid, are to be given, upon this specific trust and confidence, to wit: that he, the said Sargent, his executors and administrators, and any successor in said trust, shall keep all moneys well and safely invested, and shall allow said Bridge from time to time so much of the interest thereof, and so much of the principal sum thereof, as said Bridge may request, and shall suffer the remainder thereof to accumulate; and upon the decease of said Bridge shall pay over the principal and accrued interest of said moneys to the City of Cambridge, to be received by said City, and known as the "Bridge Charitable Fund,"

to be forever held by said City upon this further trust: to add the interest of said fund to the principal, until such time as said fund by the accruing of interest, or by gifts from other philanthropic persons, shall amount to two thousand dollars, after which time, one third part of the interest of said fund shall be added to the principal annually forever, and the remaining two thirds of such interest shall be paid over annually to the Overseers of the Poor for the time being, to be by them expended for the deserving poor of the City of Cambridge in such manner as they shall deem best.

In making this gift the said Bridge does not flatter himself that the small amount so given is sufficient of itself to claim the attention of the City Government, but he indulges the fond hope that it may prove an incentive to the liberal and philanthropic to enlarge the fund by their contributions, and that the same may be so wisely managed, that it shall in time to come afford relief to many worthy but unfortunate persons in the City in which said Bridge has so long lived.

In witness whereof, said Bridge and said Sargent have hereunto, as also to a duplicate hereof, set their hands and seals, the twelfth day of August, in the year of our Lord one thousand eight hundred and seventy-five.

LEVI BRIDGE. [Seal.]
JOHN SARGENT. [Seal.]

In presence of
JUSTIN A. JACOBS.

The City Council voted, September 27, 1876, to accept the bequest, and an ordinance concerning its care and management was passed December 13. Under the provisions of this ordinance, the Trustees entered upon their duties January 27, 1877, at which time they received from Mr. Sargent a bank-book on the Cambridgeport Savings Bank, containing the bequest of the late Mr. Bridge, amounting to $ 891.83, and decided to keep the Fund invested in the same bank.

In October, 1877, the following communication was received from Samuel J. Bridge, another "philanthropic person."

BOSTON, October 15, 1877.

HON. FRANK A. ALLEN, *Mayor of City of Cambridge.*

DEAR SIR, — I desire to add to the "Bridge Charitable Fund" in the City of Cambridge, established by my relative, the late Levi Bridge, and

confirmed by an ordinance of the City, January 24, 1877, a sum equal to the amount donated by him, viz., eight hundred and ninety-one dollars and eighty-three cents ($ 891.83).

Levi Bridge was the second son of Francis and Eunice Bridge, born at Winchendon, February 15, 1784. He was a remarkable man. His history will more fully appear from the address of Hon. John Sargent and the inscription on his gravestone. In 1822 he became dangerously insane, so much so, that his family were obliged to confine and tie him. It was a great calamity. At that period there were no public institutions for the insane, and his family were compelled to place him in the Cambridge Almshouse for security. Soon after, his family were scattered, and in consequence he was strangely overlooked by two former generations. I knew him in my boyhood, had heard of his great and sad affliction and removal, but, with all his living relatives, supposed he was long since dead.

A few years ago I discovered accidentally, and greatly to my surprise, that he was still living. I at once relieved the City of its charge, by paying his board, securing for him a separate and comfortable room, and having his food supplied from the warden's table. Even at his advanced age he was in possession of all his faculties, sight, hearing, and intellect unimpaired. It was pleasant to visit him; his conversation was always interesting and instructive. His self-respect restored, the last days of his life were peaceful and happy, and he died independent of the world, a citizen and a voter. It was his wish, and it is mine, that beyond a proper record there may be no unnecessary publicity in the annual distribution of the fund, nothing that would have a tendency to wound the pride of the recipient. This donation is made in the hope and expectation that the City of Cambridge will always have a fostering care of his gravestone, as well as those of his and my ancestors, Deacon John Bridge and his son, Matthew, erected by me July 4, 1876, in the Old Cambridge burial-ground. I send you a deposit-book for the amount of $ 891.83 in the Suffolk Savings Bank, Boston.

Very respectfully,

Your friend and obedient servant,

SAMUEL J. BRIDGE.

Accompanying the above communication was the deposit-book referred to, and the amount, $ 891.83, was deposited in the Cambridgeport Savings Bank, and added to the original fund.

The amount of the fund now on deposit is as follows: —

Bequest of Levi Bridge	$ 891.83
Interest to July, 1877.	22.27
Donation of Samuel J. Bridge . . .	891.83
Total value of fund, Nov. 30, 1877, not including interest accrued but not paid .	$ 1,805.93

The fund, with its accruing interest, will amount to the sum of two thousand dollars ($ 2,000) in about two years from this time, after which, as provided in the Deed of Trust, and by the ordinance, "two thirds of the interest shall be paid over to the overseers of the Poor, to be by them expended for the deserving poor of the City in such manner as they shall deem best, and the balance of the interest shall be added to the principal forever."

The Trustees add their sincere wishes to the "fond hope" of the worthy founder of this fund, that other liberal and philanthropic persons may be incited by his gift to so enlarge it by their contributions that it shall at no distant day "afford relief to very many worthy but unfortunate persons in the City in which said Bridge so long lived."

FRANK A. ALLEN,
PEREZ G. PORTER,
WALTER S. SWAN,
Trustees.

REPORT

OF THE

TRUSTEES OF THE SANDERS TEMPERANCE FUND

THE Trustees of the Sanders Temperance Fund respectfully submit their Thirteenth Annual Report for the year ending November 30, 1877, as follows :—

This fund, amounting to $10,000, was bequeathed to the City by Charles Sanders, Esq., to be held as a permanent fund, the interest of "which should be paid quarterly as salary to some worthy man who has discretion and zeal for the cause, to be constantly employed as a Missionary in the cause of temperance, in reforming old drunkards and preventing young drunkards, and abolishing as far as possible the use of all intoxicating articles."

The City Council accepted the bequest, and established the fund under the above conditions by ordinance. In accordance with the requirements of the ordinance and the provisions of the will of Mr. Sanders, the Trustees elected, in the month of April, Mr. Alonzo Stewart, "a worthy man, possessing discretion, and zeal in the cause of Temperance," as missionary, to whom the interest on the fund, amounting to $600, has been paid in quarterly instalments.

His Report, submitted herewith, will show the result of his labors.

FRANK A. ALLEN,
PEREZ G. PORTER,
JOHN CLARY,
SILAS RHOADES,
WOODWARD EMERY,
} *Trustees.*

REPORT

OF THE

SANDERS TEMPERANCE FUND MISSIONARY.

To the Trustees of the Sanders Temperance Fund.

Gentlemen, — In the providence of God the time has arrived when it becomes the duty of your missionary to render to you the record of his labors during the year now ended.

The review from this standpoint produces mingled sensations of pleasure and regret, — pleasure, that in many cases I have been privileged to meet those who thought there was no one to care for them in their degraded condition, and try, by words of kindness and cheer, to inspire in them hope, and courage to strive to attain to higher and more useful lives; regret, that I have accomplished so little in this direction, when so much needed to be done, and have come so far from meeting the reasonable expectations of the founder of this mission. I have devoted my time and energies to the work of reclaiming the inebriate, and, by precept and example, warning those just commencing the downward road of ruin to turn from it before it is too late.

I have been greatly aided in my work by the kindness and sympathy of the Chief of Police and his associates. In the pursuance of my duties I have been at the Police Court at all its sessions, with the exception of two weeks' vacation (by permission), and with kind words tried to encourage the unfortunate slaves of appetite to throw off the shackles of intemperance, and, when advisable, have recommended that their cases be laid on file, and they given another trial. In other cases I have become responsible for their future good conduct, thereby securing their return to suffering families. The cases are rare where this confidence has been betrayed.

The arrests for drunkenness are about the same as last year, though many familiar faces are missed from the court-room: we trust for good reasons. Fewer of our own citizens and more from other cities have been before the court.

I have administered the pledge of total abstinence from all intoxicating drinks to one hundred and fifty-eight persons brought before the court for drunkenness; have attended one hundred and fifty temperance meetings; have made more than ninety visits to the Almshouse, House of Correction, and Jail. I have distributed in these places 36,655 pages of religious and temperance literature, and yet the great evil, intemperance, exists in our fair city; its work the same, the results the same, — poverty, crime, suffering, and sorrow beyond the power of human lips to portray. Let us all, with earnest prayer and fervent supplication, entreat our Heavenly Father to show us what more we can do to stay the progress of this dreadful evil.

Respectfully submitted,

ALONZO STEWART,
Missionary.

December 22, 1877.

REPORT

OF

THE MILK INSPECTOR.

To His Honor the Mayor and Aldermen of the City of Cambridge.

Gentlemen, — I herewith submit my Report for the year ending November 30, 1877.

The whole number of registered wholesale milk-dealers who sell from one can upwards has been sixty-six. Of these, two have since sold out.

I have endeavored to examine with the lactometer at least one sample of the milk sold by each of these dealers in the course of the year, and have found the milk so examined had with two or three exceptions a specific gravity exceeding 1.029.

In the case of these exceptions the milk was examined a second time at an interval of a few days, and found to be all right.

A number of cases have been brought to me, in which the parties have suspected adulteration, but upon examination the milk has in every case been found to be of fair average quality.

Skimming, or topping, is carried on to a considerable extent by certain of the milkmen, who are thus enabled to sell their milk at a considerable profit.

As the law stands at present, there seems to be no method of putting a stop to this practice, and I have strong doubts as to whether it would be possible so to frame a law as to meet the case; the cream being such a variable quantity, and being so strongly affected by changes in feed, breed of cows, and state of the weather.

Through the kindness of Mr. A. L. Murdoch, of Jamaica Plain, I have been enabled to extend my research on the composition of pure milk, with the following results: —

No. 1. Shorthorn cow.
No. 2. Guernsey.
No. 3. Grade native and Jersey.
No. 4. Brittany.
No. 5. Brittany and Jersey.
No. 6. Ayrshire and native.
No. 7. Dutch.
No. 8. Ayrshire.
No. 9. Native and Shorthorn.
No. 10. Dutch and native.
No. 11. Devon.

These milks were each samples of an entire milking, and serve extremely well to show the variation in pure milk.

The average composition of pure milk does not vary greatly from the following: —

Specific gravity		1.029 to 1.032
Cream		9.00
Sugar	4.40	
Caseine	4.30	
Ash	.60	
Total solids not fat	9.30	
Fat	3.20	
Total solids	12.50	
Water	87.50	
	100.00	

The analysis of the eleven samples was as follows: —

	1	2	3	4	5	6	7	8	9	10	11
Specific Gravity	1.027	1.028	1.029	1.027	1.030	1.032	1.032	1.028	1.030	1.029	1.030
Cream	6 00	13.00	10.00	15.00	7.00	5.00	18.00	10.50	19 50	5.00	13 00
Sugar	4.50	5.43	5.20	5.02	5.20	4 48	5.19	5.21	5.20	5.31	5.41
Caseine	3.80	3.02	3.59	3.94	3.20	4 35	3.85	3.52	3.96	3.18	2.83
Ash	0.60	0.72	0.65	0.70	0.83	0.70	0.72	0.58	0.73	0.60	0.58
Total Solids not fat	8.91	9.17	9.44	9.66	9.23	9.53	9.76	9.31	9.89	9.09	8.82
Fat	2.83	4.72	4.79	4.38	2.69	3.91	3.38	5.47	5.65	2.46	4 57
Total Solids	11.74	13.89	14.23	14.04	11.92	13.44	13.14	14.78	15 54	11.55	13 39
Water	88.26	86.11	85.77	85.96	88.08	86.56	86.86	85 22	84.46	88.45	86.61
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Up to this date I have analyzed forty-five samples of milk, of which there could be no doubt as to purity, with the following average results: —

Specific gravity		1.03
Cream		13.10
Sugar	4.88	
Caseine	3.94	
Ash	.67	
Solids not fat	9.49	
Fat	4.48	
Total solids	13.97	
Water	86.03	
	100.00	

During the year I have examined seven samples of milk given me by citizens of Cambridge, said milk having been delivered to them by their milkmen, with the following results: —

	1	2	3	4	5	6	7
Specific Gravity	1.031	1.030	1.030	1.026	1.026	1.027	1.033
Cream	7.00	....	....	10.00	13.50	9.00	6.50
Sugar and Caseine	8.39	9.46	8.18	7.17	6.83	8.27	8.60
Ash	0.65	0.71	0.58	0.60	0.60	0.63	0.58
Total solids not fat	9 04	10.17	8.76	7.77	7.43	8.90	9.18
Fat	2.87	4.08	3.77	3.07	3.58	3.32	2.70
Total solids	11.91	13.25	12.53	10.84	11.01	12.22	11.88
Water	88.09	86.75	87.47	89.16	88.99	87.78	88.12
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Of these samples No. 1 and 7 had evidently been skimmed; Nos. 2 and 3 were milks of fair quality. Nos. 4, 5, and 6 I have every reason to suppose were pure milks. They were the product of a herd kept in Waltham, and my attention was called to the poor quality of the milk by the milkman who was selling it. At his request I went to the farm and saw the cows milked, and took sample No. 4. Sample No. 3 was the previous evening's milk, and sample No. 6 was taken from the same herd about a week after.

As the law now stands, we have no protection against the sale of such milk as this, although it is no better than milk of average quality, containing from 10 to 20 per cent of added water.

City Property in Inspector's Office.

One lactometer.

S. P. SHARPLES,
Milk Inspector.

December, 1877.

REPORT

OF THE

SEALER OF WEIGHTS AND MEASURES.

To the Board of Mayor and Aldermen of the City of Cambridge.

Gentlemen, — Finding, soon after my appointment as Sealer of Weights and Measures, that it would be impossible to execute the law as it then stood on the statute-book of the Commonwealth, with his Honor the Mayor's permission, and with the co-operation of the Sealers of Boston, Chelsea, and Malden, I drew up a bill modifying the law in such a manner that it became practical and easily enforced. This was passed with some modifications by the Legislature, and on the 20th of April last it became a law.

I would also call your attention to two other laws which were enacted last winter. The first of these, 1877, Chap. 150, provides that cities or towns shall not be again supplied by the Commonwealth with sets of weights and measures, in case the same may be destroyed, but permits them to be insured for the benefit of the town.

The second is 1877, Chap. 40, which legalizes the metric system of weights and measures, and provides that each city and shire-town shall be provided with a duplicate set of metric weights and measures. These have not yet been furnished, owing to an alleged insufficiency of the appropriation made for the purpose.

In accordance with the law as amended, I have visited, either personally or by deputy, such places as directed by the law, and sealed the weights and measures found therein, and collected the fees established by the State law, which have been turned over to the Treasurer.

There has been some complaint about the renewal of the law

charging fees, but with only a very few exceptions the bill has been paid upon presentation.

The weights and measures in use throughout the City have generally been found in good condition, requiring but little correction.

Amount of fees received $276.46

State Property in possession of the Sealer of Weights and Measures.

One balance.
One set avoirdupois weights.
One set liquid measures.
One set dry measures.
One brass yard-measure.

City Property in possession of Sealer of Weights and Measures.

One ton of iron weights.
One trip scale and box.
One set of brass weights in box.
Four iron weights, 20 lbs., 2 × 10, and 5.
Lot of tools and stamps for adjusting and sealing weights and measures.

S. P. SHARPLES,
Sealer of Weights and Measures.

REPORT

OF

THE CAMBRIDGE WATER-BOARD.

To the Honorable City Council of the City of Cambridge.

In accordance with the City Ordinance, the Cambridge Water Board herewith presents to you its Thirteenth Annual Report: —

Total Cost of the Works.

Cost of the Water-Works, November 30, 1876, as per last year's Report	$1,656,710.31
Expended for extension account for the year ending November 30, 1877	15,881.98
Making the total cost, November 30, 1877 . .	$1.672,592.29

Net Cost of the Water-Works.

Amount of total cost as above		$1,672,592.29
Less amount of water debt paid from the sinking-fund to June 30, 1876		186,100.00
Leaving amount of water debt unpaid . . .		$1,486,492.29
Deduct from this the amount of the sinking-fund to June 30, 1876, as per Treasurer's account . .	$179,441.23	
Gain in 1877, to November 30 . .	57,062.36	
		$236,503.69
Showing about the net cost of the Water-Works, November 30, 1877.		$1,249,988.60

Statement in brief showing the transactions on account of the Water-Works for the year ending November 30, 1877: —

Received.

Appropriation for extension account		$ 30,000.00
From water-rates	$ 158,078.11	
Less water-rates refunded	3,234.52	
		154,843.59
From supply account, shutting off and letting on water, and sale of old material		8,191.70
Rent of house, etc.		151.25
Interest on sinking-fund		9,313.63
Interest accrued on bonds sold, etc.		1,281.67
		$ 203,781.84

Expended.

For extension account	$ 15,881.98
For care and repair	22,612.44
For supply account	4,107.04
For interest on water debt	90,000.00
Unexpended appropriation	14,118.02
Balance showing gain in 1877	57,062.36
	$ 203,781.84

Comparative Receipts.

Water-rates for the year ending Nov. 30, 1876	$ 179,166.76
Water-rates for the year ending Nov. 30, 1877	154,843.59
Showing *decrease* for the year 1877	$ 24,323.17

This large decrease from last year is partly explained by the fact that last year, $ 17,132.77 was included in our account received from the City for water furnished *in previous years*, while $ 4,357.50 due for water furnished the City this year was not approved in time to include in this year's accounts.

The following table will show the comparative rainfall and the height of water in the pond during the past three years. We are this year, as in former years, indebted to officers of the Cambridge Observatory for the table of rainfall: —

Months.	Rainfall.			Below High-Water Mark.		
	1875.	1876.	1877.	1875.	1876.	1877.
	in.	in.	in.	ft. in.	ft. in.	ft. in.
*December	1.50	1.04	5.09	5 9	6 1¾	4 7
January	3.22	1.82	3.87	6 6	5 6	4 6
February	3.54	4.74	0.89	7 4⅝	5 5⅛	4 2⅜
March	8.10	6.53	7.46	6 7⅛	5 1⅜	2 0
April	4.73	4.65	3.66	5 7	4 1⅛	0 8⅛
May	3.08	3.07	3.58	5 5	3 8⅜	0 11⅞
June	6.60	1.92	2.26	4 2⅜	4 0¾	1 9
July	2.88	6.08	2.66	5 8⅝	4 11¼	2 8⅛
August	5.66	1.38	4.58	6 0⅝	5 4⅜	3 6⅛
September	3.46	3.77	0.51	6 4⅜	5 8⅝	4 3⅝
October	3 83	1.82	6.77	6 0	6 5⅛	4 6⅛
November	4.86	6.78	7.60	5 9⅛	5 1⅜	3 11
Total	51.46	43.60	48.93	Aver. 5 10	5 1⅝	3 1⅝

* This is in each case the December of the previous year.

It will be seen by this table that the average height of the water in the pond during the past year has been about two feet higher than the two previous years, and that too when the amount of water pumped the last year has been above the average of the three years past, and the rainfall about the same. This is accounted for by the water coming through the new conduit, from the filter-basin near Little Pond, and from Wellington Brook. We start the new year with about two feet more water in the pond than one year ago, representing about 110,000,000 gallons.

Work Done.

The amount expended the past year on our extension account has been the smallest for many years. No large outlays were needed, a part of the work contemplated was not done, being that of making a filter-dam to purify the water that came into the pond from the Cushing Street district. This plan, referred to in our last Annual Report, was, after a careful examination by our City Engineer, pronounced impracticable, and was therefore abandoned.

Most of the work done has been in renewing pipes in regions where the original pipes had decayed or become too small for the present wants of the water-takers, and to furnish also a good supply

for fire purposes, and in raising and renewing pipes in the filled districts.

Purity of our Water.

Much attention has been devoted the past year to finding and removing sources of pollution to our water. In this direction a beginning was made at Richardson's Piggery, of which so much has been said. The lower pens nearest the brook have been removed, and the ditch leading from Wellington Brook to a point near the piggery has been filled up solid its whole length, and a dike has been thrown up at the foot of the upland on the edge of the meadow, so that we do not expect any further just complaint from this source of trouble.

The line of Wellington Brook was then followed up into Belmont, and the objectionable house-drainage and privies which were spoken of in the Report of the City Engineer to us, which, by vote, we sent to you, October 5, last, have been provided for and remedied. Nearly all causes of complaint in this direction have been removed, and negotiations and other means at our command are being used to complete this work, and thus remove all reasonable cause of complaint in this direction.

A flume has been constructed at the Wellington Brook gate on our conduit; by this means we are able to control the water in the brook, and only let it into the conduit when it is in good condition for use.

No water has been taken during the year from Spy Pond, and none from Little Pond, except what passed through the filter-basin.

The greatest source of pollution to our water now by drainage into the pond is from the Cushing Street district in Belmont. This at times is very bad, and is growing worse every year. In times of heavy rains a large amount of very objectionable matter flows into the pond, over the low lands bordering on the pond on the south-west side. We think this subject has assumed such proportions that there is no justification for any longer delay in providing a remedy; and if this is not done our citizens will have just ground of complaint.

After such examination of this subject as we have been able to make, we have come to the conclusion to recommend the construction of a sewer from a point near Cushing Street, thence along the

borders of the pond to the Watertown Branch Railroad, thence along the line of the railroad to Lexington Avenue, to connect there with the sewer already built.

A plan for such a sewer to carrry away this drainage, at an estimated cost of $9,345.58, was presented to you in the City Engineer's Report, before referred to. (Land damages, or right of way, not included.) This will be a continuance of the original plan for a marginal sewer around Fresh Pond, as set forth in our Report to you in the year 1872, and referred to in other Reports since.

At the proper time we shall ask for such an appropriation as will enable us to complete this work at the earliest moment.

During the past summer we had an unusual experience in the sudden appearance and very rapid increase of what proved to be a vegetable growth in our water.

It was first observed in the reservoir, August 22, in the form of a greenish scum on the water which emitted an offensive odor. The water seemed to be full of a substance which was constantly rising to the surface and forming a scum. A man was employed at the reservoir in removing this floating matter every day from its first discovery until it disappeared.

The presence of it in the water caused some complaint from the water-takers, and required a constant blowing off of the water at hydrants and dead-ends to abate the trouble as much as possible. At first it was feared that it was caused by the introduction of so large an amount of water into the pond from the new conduit, but examination proved that this was not the cause, as we found other water-supplies within a few miles as bad or worse than ours.

We had a careful examination and analysis of the water made by Professor Sharples, who sums up his report to us as follows: "In my opinion the unpleasant taste of the water is entirely due to the decay of certain algæ, and it will cease very soon. There is no evidence that this condition of the water is injurious to health; it is simply unpleasant. The analyses at the present time agree very closely with those made last winter."

It will be seen by what follows that Professor Sharples agrees with other eminent authorities in regard to the nature and harmlessness of this vegetable growth in the water.

So many inquiries were made about this subject of Professor Nichols, that October 1 he issued a circular on the subject, which

presents all that is at present known about it, in a concise and intelligent manner, and as it seems to us this is a subject of great importance to be understood by all interested, we embody in our Report his paper, to which we invite your careful consideration.

"CIRCULAR.

"MY DEAR SIR:—

"As I am often asked for information with reference to what is known about the nature and cause of the green material which during the summer-time fills the waters of many of our ponds, I have written out somewhat at length what is the actual state of our information in the matter.

"I take the liberty of sending you a copy of what I have written. I shall be very glad to receive any information or details as to the occurence of similar growths in ponds, with which I am not familiar, and being interested in various matters relating to water-supply, I should esteem it a kindness if you would favor me with such reports as you may from time to time have at your disposal. I shall endeavor to reciprocate as far as I have opportunity.

"The appearance to which I refer is due to a vegetable growth; not to the presence of particles of dead, decomposing, or decayed vegetable matter from the sides or bottom of the pond, but to the enormous development of one or more of several species of microscopic plants. The individual plants are in some cases distinguishable by the naked eye, but their form and structure can be made out only by use of the microscope. The number of individuals is almost infinite, and under favorable conditions they increase with great rapidity; their presence gives a decidedly green or greenish-yellow tinge to large bodies of water, and their death and decay often cause considerable offence to the sense of smell of those sojourning in the neighborhood, and to the sense of taste of those obliged to drink the water.

"Yours respectfully,
"WM. RIPLEY NICHOLS.

"Mass. Inst. of Technology,
Boston, Oct. 1, 1877.

"No natural water which is exposed to the air, whether in pond or river, is ever entirely free from vegetable growth, and to certain of these growths attention has been more frequently called of late, owing to the very considerable increase in the number of towns furnished with a supply of water taken from natural ponds of long standing, or from artificial reservoirs recently made, either by raising the level of a natural pond, or by damming some stream.

"The non-professional and non-botanical observer might very likely divide the various plants found growing in the water into three classes: 1st, and most readily recognized as plants, are those commonly known as eel-grass, pond-weed, pickerel-weed, lilies, etc., which have roots and leaves, and also, at the proper season, flowers; 2d, and less readily recognized as plants, are the confervoid growths,* as they are often called, of filamentous structure, grass-green, or in some cases bluish-green in color, forming tangled masses readily removed from the water, and when so removed, shrinking enormously in apparent bulk and drying away to a grayish or colorless mass, in some cases looking almost like coarse paper. Plants of this character grow in almost all reservoirs, or other bodies of water exposed to the light and air, both in still and running water. These plants either float in masses in the water or grow attached more or less firmly to the rocks and stones of the bottom of the pond or reservoir. By their growth they do no harm to the water in which they flourish, and as they are readily arrested by ordinary wire screens, or readily removed by rakes or scoop-nets, their presence causes no serious inconvenience in water used for town supply. If detached and floating in the pond they readily drift to shore, so that when the ice is formed they are not likely to be frozen in and to injure the ice for the market.

"The third division of the non-professional would include those minute organisms which appear as greenish specks, or minute straight or curved threads, diffused through the water, visible enough if a large quantity of water be looked at, but perhaps almost escaping notice in the small quantity which would be taken up in a single glass. If collected together as a scum, which often happens, especially on the leeward shore of a pond, the scum is not coherent, is easily broken up, either by a wind setting in the opposite direction, by a shower of rain, or by artificial agitation. The appearance has been sometimes described as that of meal or of fine dust scattered through the water.

"While very many species of the minute algæ present this general appearance, as far as my own observation and information extend, the number of species which are known to increase to such a great extent as to completely fill the waters of ponds of many acres' area, and to cause sensible inconvenience, is comparatively small. The most common in this neighborhood (New England) seem to be the *Clathrocystis æruginosa;* but certain plants referable to the *Nostochineæ* are not uncommon alone, or in company with the *Clathrocystis.*

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* These, as well as those mentioned below, belong to the class of cryptogamous (non-flowering) plants, which the botanists call algæ, — plants which grow in the water or in moist places, and usually contain chlorophyll (green coloring matter), or some allied substance. To their number and their variety there is almost no end.

"The inconvenience caused by the presence of the plant is felt first by those who use the water for town supply, and, secondly, by those who cut ice upon the pond. While the plant is alive and growing there is little taste or odor given to the water, hardly noticeable if the water be iced. When the plants enter into the first stage of decay, the water acquires a peculiar taste and odor. Light and a certain degree of temperature are requisite for the normal growth of these algæ, and the decay often takes place in the mains and service pipes: it will not unfrequently happen that the water in a reservoir or pond will have almost no taste, while the water as delivered to consumers will have a decided taste. By the settling of the green growth to the bottom in a more or less decayed state, the ponds are generally (?) cleared before the cold weather sets in, but in several cases which have come under my observation the material floats up to the under surface of the ice, and is frozen into the ice, making it unmarketable. I am collecting data, but have arrived at no satisfactory conclusion as to the circumstances under which this does or does not occur, for it does not happen every year even in the same pond, and after summers of equally abundant growth.

"Among the various questions which are often propounded with reference to the matter, are the following:—

"1. What is the cause of the trouble?

"2. Why do we (in this region) hear so much more about it than formerly?

"3. Is it injurious to health?

"4. Can anything be done to prevent it?

"1. *The cause of the trouble.*

"Although there is no doubt that the trouble is caused by minute vegetable organisms, of whose life history a good deal is known to botanists, various causes have been suggested for its appearance. By many it has been supposed to be a sort of fermentation, a process of purification. In some cases this abundant appearance of the green matter has seemed to follow the apparent increase of sewage and other impurities discharged into the pond. I have within the last few years examined a great many ponds affected in this way, and cannot satisfy myself that there is any connection between such discharge of sewage and the growth of these algæ; the amount of soluble nitrogenous matter, of ammoniacal salts, of phosphates, and of other mineral compounds necessary for their growth are everywhere present, and it would be unsafe to prophesy the security therefrom of any pond. Although it would seem that ponds recently made by flowing marshy or cultivated land were peculiarly liable to the trouble,

especially if shallow, my observations have led me to make even this statement less emphatic than I was at first inclined.

"Although these plants are not all killed by a considerable degree of cold, still they *thrive* only in warm weather. Observations on this point are incomplete, but such as I have been able to collect would seem to point to a temperature of 70° F., or thereabout, below which the trouble is not likely to begin; extended observations on this point are much needed.

"I have been unable to satisfy myself that the presence of aquatic plants at the margins of the ponds has other effect than that of entangling and holding masses of scum, which if then exposed to a hot summer sun rapidly enter into decay.

"Mr. George W. Carpenter, of the Albany Water-Works, has made the observation that in years when there is early in the season in his reservoirs a vigorous growth of certain *filamentous* algæ (which from the description probably are of some species of *Spirogyra*, or *Zygnema*), there is not any growth of the finer algæ, which in other years cause more or less trouble. I have met with other instances where the same thing has seemed to obtain; on the other hand, I have often found *Spirogyra* and other filamentous plants growing at the same time with the *Clathrocystis*. In Horn Pond, near Boston, there is generally in the spring a large amount of a plant which to the eye seems, except in color, very like the filamentous algæ referred to,* and later in the season, for some years at least, there has been an abundant growth of the *Clathrocystis* and of an *Anabæna*.

"2. *Why do we (in this region) hear so much more about this growth than formerly?*

"One reason, at least, is to be found in the fact that the attention of more persons is called to the various ponds than formerly. It may be true, although hardly probable, that for the past five or six years there has been more of the growth in the aggregate than usual. There is no doubt that in the case of certain individual ponds there has been a decided increase; in other ponds there has been apparent decrease; others seem to be subject to irregular fluctuations in the amount from season to season.

"It is also to be remarked that little is generally said by those in charge of Water-Works with reference to such matters, as everything of

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* This is the *Plectonema Wollei*, a plant of bluish-green color, belonging to the order of *Nostochineæ*, described by Dr. Farlow in the Bulletin of the Bussey Institution, Vol. II. (1876), p. 75.

the kind is apt to be exaggerated in the public prints, and often made capital of by political and other opponents, although the trouble may be entirely beyond the control of Water Board or Superintendent.

"The earliest Water Report with which I am acquainted that shows any clear conception of the nature of the trouble is the Report of the Croton Water Board, New York, 1859. The Albany Water Report for the year 1865 contains a very full account of the trouble as there experienced. From the figure given of the plant, I infer it to be a species of *Anabæna*, similar to that which I have observed at Horn Pond and elsewhere.

"3. *Is the matter injurious to health?*

"The observations as to the effect on the human organism of water containing these algæ are not, of course, very definite or complete. In some places, however, where the only source of supply is thus affected, opportunity for observation is afforded. I have not been able to obtain any evidence of the unwholesomeness of the water from a supply which is, in other respects, of good quality. When the algæ are alive and fresh, horses and cattle drink the water readily, in preference to spring water; when decay has taken place, the water sometimes becomes so offensive that they refuse to drink it. In this condition it is manifestly unsuited for domestic use.

"4. *Can anything be done to prevent the trouble?*

"As far as our present knowledge extends, — nothing. The extent to which filtration of the water may mitigate the evil has been a matter of some experiments, and this point will be discussed at some length in the next Annual Report of the State Board of Health; I will therefore not forestall what I shall have to say in that place.

"In conclusion, I wish to be distinctly understood as not asserting that all bad tastes and odors to which water-supplies are subject are due to the presence of these or other algæ. They are the real cause of a real trouble. The occurrence of a *fishy*, *musty*, *cucumber*, *green-corn*, or other peculiar odor or taste, may be due to the presence or decomposition of certain algæ, but it may be produced by the decay of more highly organized plants, or by causes of which we are ignorant. For instance, the cucumber taste which affected the Chestnut Hill Reservoir of the Boston Water-Works, in 1875, was traceable to no such cause, nor indeed to any assignable cause, although careful examinations were made from a chemical, from a botanical, and from a zoölogical standpoint. Other cases also have come under my observation where no algæ, fresh or decomposed, could be found in sufficient quantity to account for the unpleasant taste which was very noticeable.

"I should say that, having begun the study of this matter some years since, I have been under obligations to many persons, to all of whom I am duly grateful, and of whom I should perhaps mention by name, Dr. W. G. Farlow, Assistant Professor of Botany in Harvard University, Geo. W. Carpenter, Esq., Superintendent of the Albany Water-Works, and The. W. Davis, Esq., Superintendent of the Poughkeepsie (N. Y.) Water-Works."

General Remarks.

We desire to express our great satisfaction at the energy and perseverance with which Mayor Allen has followed up the examination of the accounts of our late Registrar, and collected and presented the evidence of his wrong-doing, so as to bring justice to the front, and secure his conviction in the face of difficulties which would have discouraged a less earnest and conscientious man.

It may be proper here to remark that we have adopted a new system of keeping our accounts, which can be compared and checked off, so as to know whether all accounts are properly vouched for; and we have also provided that the yearly auditing shall be done by an expert, who goes over the whole year's work in detail.

An entire change was found necessary or desirable in the persons employed in connection with the water office, and we feel with our present employees, and our new system, there is no danger of a repetition of our recent experience.

It gives us pleasure to commend the assiduity and faithfulness of our present Registrar, and the men employed under him, and also to note the continued interest in our Department by our City Engineer and City Solicitor, to both of whom we are indebted for advice and counsel, which has always been cheerfully rendered.

No large outlay in the extension of the Water-Works is contemplated during the coming year, except what is found necessary in connection with the drainage from the Cushing Street district.

We have two districts where the pipes need to be raised and renewed, which it is proposed to have done. The very low price of pipe and material, and the superabundance of labor, make this a most favorable time to renew pipes where necessary.

We would again state the importance of our having from the Legislature the well-defined authority to take what land may be necessary about the ponds to preserve the purity of the water, the

present act being indefinite, and not clearly meeting our wants or necessities.

The application we made last year for the police jurisdiction of Fresh Pond was refused, it being opposed by Belmont, and thus the importance of having the entire pond included within the City limits was again presented; we think now with proper effort this could be accomplished, and we commend it to your consideration.

At the time that portion of Fresh Pond was dug out near our engine house, a convenient place was needed whereon to deposit the material taken out.

An agreement was made with the Tudor Heirs, by which they agreed to give the strip of land between Lake View Avenue and Fresh Pond to the City, upon the condition that it should be kept forever open as a common, and beautified by setting out trees, shrubs, etc. The low unsightly place along the avenue was graded up by the material from the pond, and the whole presents a comparatively neat appearance, with a full view of our beautiful lake for a long distance.

The soil taken from the pond needs clay or gravel mixed with it to make a greensward, and we would call attention to this matter, that the title of this ground may be secured, and that it may be improved in accordance with the original understanding and agreement. In a few years from now this will be one of the most pleasant drives and places of resort in our city, and at a very small cost all that is necessary can be done.

Whether this work should be turned over to the Committee on Public Property, or done under the direction of the Water Board, remains for you to decide. But we think that trees should be set out, and evidence given by our actions that we mean to carry out our part of the agreement in good faith.

On the 14th of April last our Superintendent, Mr. S. W. Dudley, died suddenly at his desk in the office of the Water Board, early in the morning, literally dying at his post of duty. We all felt that the Board and the City had lost a faithful and valuable servant, and we were much in doubt about finding one who would fill his place.

After looking around carefully, the Board made a unanimous choice of Mr. Hiram Nevons, a man well known to many of our citizens, as Mr. Dudley's successor. He was chosen May 8th, and the result of more than six months' experience leads us to the

conclusion that we have got the right man in the right place. During that time he has made great progress in acquainting himself with the Water-Works in their many details, and the duties appertaining to his office; at the same time the ordinary business of the Water-Works has received prompt attention.

For details of what has been done, and our present condition, we refer you to the reports of the Registrar and Superintendent hereto attached, and submitted as part of our Report.

Respectfully submitted,

GEO. P. CARTER,
C. W. KINGSLEY,
H. L. EUSTIS,
PEREZ G. PORTER,
FRANK A. ALLEN,
J. WARREN MERRILL,
JOHN H. LEIGHTON,

Cambridge Water Board.

CAMBRIDGE, Dec. 15, 1877.

REPORT

OF

THE WATER REGISTRAR.

WATER REGISTRAR'S OFFICE,
CAMBRIDGE, December 10, 1877.

TO THE WATER BOARD:—

THE undersigned herewith presents his Report of the receipts, expenditures, and abatements for the year ending November 30, 1877, together with a statement of the number of water-takers, fixtures, etc., and other matters in his department.

Receipts.

Water-rates	$129,958.90	
Meter-rates	20,292.25	
		$150,251.15
Water-rates for 1875–76	3,458.04	
Meter-rates for 1875–76	3,698.92	
City rates for 1876	670.00	
		7.826.96
		$158,078.11
Laying and repairing supplies	$6,204.86	
Old material sold	626.54	
Off and on water, seals and fines	1,360.30	
Rent of house at pipe-yard	132.50	
Return insurance premium	18.75	
		8,342.95
Total		$166,421.06

All of which sum has been paid to the City Treasurer.

Expenditures.

Care and Repair Account, viz.: —		
General repairs	$ 9,520.56	
Pumping service	7,564.49	
Office expenses	5,527.39	
Water-rates refunded	3,234.52	
		$ 25,846.96
Extension account		15,881.98
Supply account		4,107.04
Total		$ 45,835.98

Abatements.

Abatements have been made during the year to the amount of	$ 783.04
Water-rates have been refunded, for houses shut off or fixtures sealed, to the amount of	$ 3,234.52

Water has been shut off for non-payment of rates, or per order of owners on account of vacancy, and seals have been applied by request of owners or occupants, as follows: —

Houses shut off in 1877	543
" let on " "	381
" " " shut off in 1876	38
Seal-locks applied to fixtures in 1877	1,105
" removed from fixtures in 1877	358
" " put on in 1876	22

Statement of the yearly revenue received from water-rates since the purchase of the works by the City.

From April 28,	1865	to Dec. 1,	1865	$ 32,367.19
" Dec. 1,	1865	"	1866	40,073.27
" "	1866	"	1867	52,733.62
" "	1867	"	1868	63,747.42
" "	1868	"	1869	76,149.30
" "	1869	"	1870	92,606.95
" "	1870	"	1871	111,782.65
" "	1871	"	1872	127,201.30
" "	1872	"	1873	146,117.32

From Dec. 1, 1873, to Dec. 1, 1874		$153,634.27
" " 1874, " 1875		138,880.37
" " 1875, " 1876		179,166.76
" " 1876, " 1877	$158,078.11	
Less refunds	3,234.52	
		154,843.59
Water-rates unpaid November 30		$ 2,471.52
Meter-rates " "		618.79
City-rates " "		4,357.50
Supplies and repairs "		
Charges prior to May 1, 1876	$7,129.19	
" since May 1, 1876	1,540,71	
		8,669.90
Total		$16,117.71

The usual annual examination of premises has been made, and the office-list of fixtures changed in accordance therewith.

136 new supplies have been laid during the year.

24 meters have been placed in use in various locations during the year, and 11 have been removed.

118 meters are now in use.

(As the Superintendent's Report this year contains a detailed list of meter locations, it is omitted from this Report.)

Besides the manufactories, etc., supplied by meter, water is now supplied to

9,738 Families.
712 Stables.
410 Shops, stores, and offices by the following fixtures, viz.:
11,806 Faucets.
3,163 Wash-basins.
1,743 Wash-tubs.
1,705 Bath-tubs.
3,778 Pan-closets.
492 Slop-closets.
23 Hopper closets.
68 Urinals.
79 Yard hydrants.
8 Fountains.

1,051 Hose.
5 Tumbler-washers.

The above is exclusive of the School-houses, Engine-houses, Police Stations, and other City buildings, using the additional number of

76 Faucets.
30 Wash-basins.
4 Bath-tubs.
5 Urinals.
31 Pan-closets.
12 Door-closets.
5 School closets, 114 seats.
4 School urinals, 417 jets.
49 School sinks, 239 jets.
6 Stables.
6 Hose.
1 Steam engine.
582 Fire hydrants.
14 Fire reservoirs.
14 Drinking fountains.
5 Garden hydrants.

Respectfully submitted,

J. WARREN COTTON, *Registrar.*

REPORT

OF THE

COMMITTEE ON ACCOUNTS OF THE WATER BOARD.

CITY OF CAMBRIDGE,
IN WATER BOARD, Dec. 19, 1877.

THE Committee on Accounts which, at the last meeting of the Board, was authorized to employ an accountant to aid it in examining the accounts of the Water Registrar, begs leave to

Report:

That Mr. James A. Holmes was employed for this purpose, and that every book, entry, and voucher of the Registrar has been examined and compared, and that all his books and accounts have been properly kept, are properly vouched, and in all respects correct.

The Committee takes pleasure in commending the neat, exact, and methodical manner in which the books of the Registrar have been kept.

FRANK A. ALLEN, } *Committee*
PEREZ G. PORTER, } *on Accounts.*

REPORT

OF THE

SUPERINTENDENT OF THE WATER-WORKS.

CAMBRIDGE, Dec. 3, 1877.

TO THE PRESIDENT AND MEMBERS OF THE CAMBRIDGE WATER BOARD.

GENTLEMEN, — The Annual Report of your Superintendent, required by ordinance, is herein presented.

My predecessor in this office, the late S. W. Dudley, Esq., died suddenly at his desk, April 14, 1877, and I was elected by your Honorable Board to succeed him, May 8, 1877. Without previous acquaintance with the details of his duties or of our extensive system of water-supply, I have made earnest endeavors to acquire a knowledge of the Water-Works and the duties of my office; which, I trust, have been moderately successful.

Little Pond, Wellington Brook, and Conduit.

The pipe connection between Spy and Little Ponds has not been used this season. It and its gate are in working condition. Some little labor has been spent on the borders of Little Pond, clearing away objectionable matter, with no material change from its condition subsequent to the extensive labors of previous years.

The "filter-basin" was completed this season by the City Engineer, and now discharges a very considerable quantity of water into the conduit.

The conduit from Little to Fresh Pond is of recent construction, large capacity, and appears to be in perfect order. No examination of the interior has been made or deemed necessary. An additional gate is required at the filter-basin end, to control its water before such examination of that portion is possible. No signs of settling

or other defects are apparent. During the past season provision has been made for ventilation at each manhole by cylindrical covers perforated on the sides. A new manhole has been built near Little Pond.

At Wellington Brook gate-house, a tight wooden flume, 33 feet in length and 4 feet in width, having a gate at its upper end, has been built to secure a clean channel from the brook to the conduit, when water from this source is used. The open channel which before existed received deposits of solid matter from the stream, without means to prevent their discharge into the conduit. The sides of the Wellington Brook channel proper, at its crossing the conduit, have also been faced with sheet-piling for a length of 56 feet, and a gate set at the up-stream end.

Much has been done this year to relieve the brook above the conduit from agencies of contamination on its borders. The most polluting influences have been abated, and others should receive future attention. Its waters should be taken early in the spring or late in the fall. No necessity to use them has yet occurred at any other season.

The conduit has been delivering water into Fresh Pond since October 11, in quantity which, with the natural pond supply, has been more than equal to the demands of pumping.

Fresh Pond.

No important changes in the surroundings of Fresh Pond have been made this season. The banks in Cambridge and Belmont on the northeast side of the pond, from the grove to west of Black's Nook, have been kept clear from rubbish, the grass trimmed, and cleanliness secured. At Black's Nook the vegetable growth of its water has been removed. All portions of the borders of the pond have been examined and watched, and, in my opinion, no objectionable drainage worthy of serious consideration gets into the pond at present, except from the neighborhood of Cushing Street, Belmont.

Pumping Works.

The Fresh Pond conduit to the pumps, the pump-wells, and all gates or connections, are in perfect condition so far as can be judged without inspection of the interior. The past season the engineer's house has been enlarged by the addition of an L; a horse-

shed has been built connected with the coal-house; the lawn and grounds about the buildings have been improved; fifty-eight Scotch elms and maples have been purchased and set out by the City Forester; and all the buildings have been painted and put in thorough repair. Railroad connection has been made with the coal-shed in such manner as to reduce the cost of discharging the coal from the cars to one quarter what it was before.

The two Worthington engines, which have been run alternately during the year, have needed but slight repairs, and, with all appendages, appear to be in perfect condition, and are so reported to me by the engineer in charge, Mr. E. C. Brooks, whose character in the line of his duty may be best estimated by a visit to the pumping-works and an inspection of the machinery there under his control.

The pumping mains, 24-inch and 30-inch from engines to reservoirs, have received no repairs and have shown no signs of leakage during the year.

Reservoirs.

The stand-pipe is in perfect order, with no change but painting the outside wood-work.

Both reservoirs have been drawn off separately and thoroughly cleaned. The larger exhibited no interior defects except some small crevices in the paving-joints and slight settling of the coping-stones at the northwest corner, with open joints. Crevices and joints were cemented or grouted. The smaller reservoir showed three sides in perfect condition, but, at the partition between the two, leakage from the larger occurred through cracks of considerable size, and there was some bulging of the pavement lining near the bottom. The top showed no settlement. No effort was made to repair the partition, as being too extended a labor for the time and circumstances; but this defective condition needs early attention to retain the power of using either reservoir separately.

The capping of the west retaining-wall had become displaced by frost, and in many places was not in contact with the earth the wall retains. No settlement of the wall appears, or indications of leakage, but portions south of the northwest corner have bulged slightly, with no appearance of recent change. South of the stand-pipe small portions were rebuilt in cement with grouting at the back, and all the capping was relaid in a similar manner. The

north and south walls were pointed, and all were whitewashed. North of the stand-pipe nothing was done to the wall proper, but I regard it as a matter for consideration whether portions should not be strengthened or rebuilt.

The low wall on the east side of the north reservoir needs repairing in the spring. The banks have required some little rebuilding, and have been kept in good order, the grass trimmed, and the walks cleaned.

Distribution Pipes.

The larger iron main pipes have needed only slight repairs, and no extensions of larger size than 8-inch have been made.

Water has been carried to the Cambridge Cemetery through Coolidge Avenue, and distributed to different points in the grounds. New pipe, with necessary connections of supplies, has been laid within the "Franklin Street District," in Franklin, Bay, Kinnaird, Hancock, and Soden Streets, and within the "Sparks Street District," in Willard, Foster, Brown, Sparks, and Mt. Auburn Streets, and Burns, Dinsmore, and Marsh Courts; in both cases a necessity resulting from the low-land filling in these districts. In Tremont Street, from Broadway to Hampshire, new and larger pipe has replaced the old. In Potter Street, west of Sixth, an 8-inch pipe has been carried to the large factory of the Eagle Rubber Co. In Buckingham, Fifth, Winter, Chauncy, Erie, and other streets, new 6-inch pipe has been laid. The total length of mains, of all sizes, put down this year has been about two and three quarter miles, details being given in the tables appended to this Report.

The repairs have been chiefly on small pipe, and although the aggregate of labor and stock is considerable, no single job has been large.

The mains have been cleared by a large amount of blowing off in August and September, in addition to the ordinary use of hydrants for this purpose.

In the "Cambridge Street District" the condition is unsatisfactory. Extensive renewals are required, and probably important changes must be made in the "Cowperthwaite Street District." In both sections extra watchfulness has been exercised to guard against the results of settling.

The 10-inch cement pipe on North Avenue, south of the Fitchburg Railroad, has required repairs in several places. Should it be

changed for an iron pipe, with a renewal of the former connection across the bridge at "Porter's Station," the territory north of the railroad would secure a duplicate means of supply, and a greater abundance of water for fire hydrants.

An inspection of all gates has been made, several new ones have been set in place of old, and all put in perfect condition. On extensions this season thirty gates have been used.

Supply-Pipes.

One hundred and thirty-six new service-pipes have been laid the past year, a little more than half as many as during the preceding. The total number at this date is 6,956. Calls are frequent for repairs, particularly in the low-land districts, where the service-pipes have suffered from the operations of filling. Two districts this year have been put in good order, and two remain in bad condition. All new supplies are provided with sidewalk stand-pipe and shut-offs, and laid in the most thorough manner with the best galvanized iron pipe and brass fitting. Unremitting efforts to detect leaks from service-pipes have been made, and immediate repairs have followed when any have been found. The condition of pipes in some such cases leads to the conclusion that galvanized iron cannot resist the action of some soils.

Hydrants, Meters, Fountains, and Stand-Pipes.

Twelve new post hydrants have been set in new locations, selected by the Chief Engineer of the Fire Department, and sixteen others have been substituted for flush hydrants in old locations. All these have been the Pattee and Perkins 5-inch hydrants. The total present number of fire hydrants is 575, of which 226 are post and 349 flush hydrants. Eight new garden hydrants have been set, which added to the number reported last year makes a total of 101.

One hundred and eighteen meters, mostly of the Worthington pattern, 14 drinking-fountains, and 36 stand-pipes for street watering are now in use, located as stated on the accompanying lists. All are in good order.

Pipe-Yard.

At the pipe-yard on Auburn Street good drainage has been secured by building a cesspool and laying 6-inch drain-pipe to the sewer in Brookline Street, an important benefit to the dwelling-house

occupied by the teamster. The fences have been thoroughly repaired, accumulations of old iron disposed of, the yard graded, and a generally improved appearance obtained.

The following tables show the monthly amount and daily average of water pumped, the Fresh Pond record of water height, the locations of meters, fountains, and stand-pipes, the details of main and supply extensions, and the account of stock on hand.

All which is respectfully submitted,

HIRAM NEVONS,
Superintendent.

APPENDIX.

Engine Record.

The Amounts of Water pumped being computed from Engine Revolutions.

In the Month of	Running Time.		Coal Used.	Monthly Totals.	Daily Average.
	Hours.	Minutes.		Gallons Pumped.	Gallons Pumped.
December, 1876 .	366	30	163,600 lbs.	89,828,100	2,897,681
January, 1877 .	408	35	178,700 "	97,854,900	3,156,609
February, " .	329	40	145,700 "	75,272,700	2,688,311
March, " .	334	20	151,400 "	75,559,200	2,437,393
April, " .	299	05	131,000 "	70,390,200	2,346,340
May, " .	334	15	138,600 "	81,314,700	2,623,055
June, " .	374	20	149,300 "	91,727,700	3,057,590
July, " .	352	40	143,500 "	81,569,100	2,631,261
August, " .	338	00	142,600 "	78,015,000	2,516,613
September, " .	340	55	141,200 "	78,799,500	2,626,650
October, " .	328	40	139,500 "	73,993,800	2,386,897
November, " .	296	10	125,800 "	66,257,400	2,208,580
Totals	4,103	10	1,750,900 lbs.	960,582,300	
Daily Aver. for Year	11	14½	4,797 lbs.		2,631,732

Fresh Pond Record.

	Feet.
Average height of water surface during December, 1876	12.30
" " " " " January, 1877	12.37
" " " " " February, "	12.65
" " " " " March, "	14.84
" " " " " April, "	16.16
" " " " " May, "	15.88
" " " " " June, "	15.14
" " " " " July, "	14.17
" " " " " August, "	13.34
" " " " " September, "	12.55
" " " " " October, "	12.33
" " " " " November, "	12.98
Average of preceding heights	13.73
Highest water observed (high water) is	16.85

List of Meters in use November 30, 1877.

	Locality.	Size.	Description.
		in.	
American Net and Twine Company	Third Street	1½	Worthington
Atkins, Henry	North Avenue	⅝	Harris
Blake Hose Association . .	Broadway	¾	Worthington
Boston & Albany Railroad Company	Putnam Avenue	1½	"
Boston Car-Wheel Company .	Hampshire Street	¾	"
Boston Chemical Works . . .	Third Street	¾	"

	Locality.	Size.	Description.
		in.	
Boston & Lowell Railroad Company	Repair-shop	2	Worthington
" " " "	Old Round House	2	"
" " " "	New Round Ho.	2	"
" " " "	Paint-shop	1	"
Boston Rolling-Mill . . .	Portland Street	2	"
Boynton Packing Company . .	Winsor Street	1½	"
Brown & Nichols	Brighton Street	1	"
Bullock, O. S.	Broadway	1	"
Cambridge Gas-Light Company .	Third Street	2	"
Carr Brothers	Lopez Street	1	"
City of Cambridge . . .	Almshouse	2	"
" " . . .	Brattle Square	2	"
" " . . .	Cemetery	4	"
" " . . .	Green Street	2	Ball & Fitz
Clark, B. P. & Co. . . .	Main Street	1½	Worthington
Clark, H. M.	North Avenue	¾	"
Cofran, S. M.	Vassal Lane	2	"
Coolidge, Joseph G. . . .	Coolidge Avenue	1	"
Cox, Leonard	Soden Street	1	"
Dailey, William	Cambridge Street	1	"
Davis, Curtis	Broadway	1½	"
Davis, J. C. & Son	"	1	"
Dover Stamping Company . .	Pleasant Street	¾	"
" " " . .	Engine	1	"
Draper, F. & Co.	Otis Street	¾	"
Dunham, George A. & Co. . .	Thorndike Street	1	"
Eagle Rubber Company . .	Potter Street	2	"
Fitchburg Railroad Company . .	Dublin Street	2	"
French, C. A.	Farwell Place	1	"
Geldowsky, F.	Otis Street	1	"
Griffin & Dolan	Decatur Street	¾	"
Hale, Teele, & Bisbee . . .	Davis Street	1	"
Hancock & Greely . . .	Broadway	1½	"
Harvard College	Botanic Garden	1	"
" " . . .	Boylston Hall	1	"
" "	Cambridge Street	2	"
" " . . .	Flagg Street	¾	Ball & Fitz
" "	Holworthy Hall	¾	Worthington
" " . . .	Holyoke House	2	"
" "	Stoughton Hall	1	Boston Machine Co.
" " . . .	Thayer Hall	1½	Worthington
" "	Yard	1½	"
Harvard Laundry . . .	Douglass Street	¾	Ball & Fitz
Hews, A. H. & Co.	Crescent Avenue	1½	Worthington
Hixon, Edward	Harvard Street	¾	"
Houghton, H. O. & Co. . . .	Blackstone Street	1	"
" " " . .	Fountain	¾	"
Jaynes & Co.	Pacific Street	¾	"
Jones, C. L. & Co. . . .	Pearl Street	¾	"
Kennedy, F. A. . . .	Green Street	1	"
Lewis, F. H.	Broadway	1	"
Little, Brown, & Co. . . .	Blackstone Street	1	"
Lowe, E. D.	Portland Street	¾	"
Lowe, J. W.	Reed Street	1½	"
Mason & Hamlin Organ Company	Broadway	1	"
" " " "	"	1	"

	Locality.	Size.	Description.
Mason & Hamlin Organ Company	Broadway	¾	Worthington
Middlesex Bleachery	Sacramento St.	¾	"
Middlesex County Ho. of Correction	Thorndike Street	2	"
Moering, Mrs.	Main Street	1½	"
Moulton, C. W. H.	Gore Street	¾	"
Mount Auburn Corporation	Mt. Auburn St.	1	"
" " "	"	1½	"
Murdock, Robert	Hews Street	¾	Ball & Fitz
New England Brick Company	Raymond Street	1½	Worthington
New England Glass Company	North Street	2	"
Page, George G. & Co.	Hampshire Street	2	"
Pike, James & Co.	Church Street	1	"
" " "	Farwell Place	¾	"
Pratt, D. G.	Broadway	1	"
Reardon, John & Son	Pearl Street	¾	"
" " "	Butter-factory	1	Ball & Fitz
Revere Sugar Refinery	Water Street	3	Rot'ry Piston
" " "	" "	3	Worthington
Reversible Collar Company	Arrow Street	1	"
Rhoades, Silas & Co.	State Street	2	"
Rogers, G. M.	Washington St.	3	"
St. Mary's School	Harvard Street	¾	"
Sands, J. L.	Walden Street	1	"
Shaw & Applin	Bridge Street	1½	"
Sortwell & Co.	Distillhouse St.	2	"
Squire, J. P. & Co.	Gore Street	2	"
" " "	" "	2	"
" " "	Stable	1	"
Standard Ammonia Company	Potter Street	¾	"
Stiles, J. C. & Co.	Winter Street	1	"
Thayer, Henry & Co.	Broadway	2	"
Thorndike, E.	Main Street	⅝	Ball & Fitz
Tower, Sylvester	Broadway	1	Worthington
Tug "Henry Chapel,"		2	"
Uhrig, Joseph	Main Street	1½	"
Union Glass Company	Packing-room	1	"
" " "	Pot-house	1	"
Union Railway Co.	Baldwin Street	1	"
" " " Car-house	" "	1	"
" " "	Cambridge Street	1½	"
" " " Brick Stable	Dunster Street	1½	"
" " " Engine	" "	¾	"
" " " New Car-house	" "	1	"
" " " Washing cars	" "	¾	"
" " " Wood-stable	" "	¾	"
" " "	Main Street	1	"
" " "	Mt. Auburn St.	2	"
" " "	North Avenue	2	"
" " "	River Street	1	"
Walworth Manufacturing Company	Main Street	1½	"
Welch, Bigelow, & Co.	Brattle Street	¾	Ball & Fitz
Wilson, John & Son	Holyoke Street	1	Worthington
Woodbury	Green Street	1	"
Woodbury & Co.	Otis Street	2	"
Woods, George & Co.	Main Street	2	"
Wyeth, H. M.	Dublin Street	1	"

List of Drinking-Fountains, November 30, 1877.

Bridge Street, at junction Cambridge Street.
Broadway, at southwest corner of Norfolk Street.
Brattle Square, east side, at Brewer's Block.
Cambridge Common, north of Soldier's Monument.
Cambridge Street, at southwest corner of Fifth Street.
Central Square, west side, at D. U. Chamberlin & Co.'s store.
Fort Washington.
Hampshire Street, at junction Broadway.
Inman Square, east side.
Main Street, at junction Front Street.
North Avenue, at southwest corner of Walden Street.
North Avenue, north side, west of Cameron Street.
Putnam Avenue, at southwest corner of Pearl Street.
Third Street, west side, north of Main Street.

List of Stand-pipes (for Street Watering), November 30, 1877.

Brattle Street, near University Press.
Brattle Street, at corner of Sparks Street.
Brattle Street, near Fayerweather Street.
Brattle Street, near Fresh Pond Lane.
Bridge Street, at junction Cambridge Street.
Broadway, near Third Street.
Broadway, at corner of Sixth Street.
Broadway, at corner of Winsor Street.
Broadway, at junction Hampshire Street.
Brookline Street, at corner of Putnam Avenue.
Cambridge Street, near Warren Street.
Cambridge Street, near Winsor Street.
Cambridge Street, at Inman Square.
Columbia Street, near Austin Street.
Concord Avenue, at junction Garden Street.
Dana Street, at Corner of Chatham Street.
Dublin Street, near Fitchburg Railroad.
Fifth Street, near Thorndike Street.
Gore Street, west of Third Street.
Green Street, near Western Avenue.
Harvard Street, at corner of Prescott Street.

Inman Street, near Broadway.
Kirkland Street, near Quincy Street.
Main Street, near Portland Street.
Main Street, near Hancock Street.
Magazine Street, opposite Warland Street.
Mt. Auburn Street, near Athens Street.
North Avenue, near the Common.
North Avenue, near Shepard Street.
North Avenue, near Forest Street.
North Avenue, near Beech Street.
North Avenue, near Spruce Street.
North Avenue, at corner of Norris Street.
Third Street, near Rogers Street.
Thornnike Street, near Third Street.
Western Avenue, near Howard Street.

New Main Pipe laid

for extensions and renewals from Dec. 1, 1876, to Nov. 30, 1877, inclusive, with the number of new gates and fire hydrants used.

LOCATION.	Iron Pipe.		Gates.		Fire Hydrants.	
	Size.	Length.	No.	Size.	No.	Size.
	in.	ft.		in.		in.
Allston St., from Brookline east	4	158				
* Bay St., from Franklin to Kinnaird	6	204	1	6		
† Brown St., from Foster north	4	39	1	4		
Buckingham St., from Concord Av. south	6	408	1	6	1	5
† Burns Ct., from Foster south	4	40	1	4		
Cambridge Cemetery grounds	4	1,159	2	4		
Chauncy St., from Garden northeast	6	598	1	6	1	5
Chestnut St., from Brookline east	4	150	1	4		
Coolidge Av., from Mt. Auburn to Cemetery	6	2,095	1	6	2	5
Dana St., from Main north	4	192	1	4		
† Dinsmore Ct.	1½	20½	1	1½		
† " "	1¼	151				
Eaton St., from Cherry to Pine	4	228	1	4	1	5
Erie St., from Pearl to Brookline	6	560	1 1	4 6	2	5
Fifth St., from Gore to Winter	6	265	1	6	1	5
First St., from Thorndike south	6	158	..	..	1	5
† Foster St., from Sparks east	6	9	..	..	1	5
† " " " "	4	301	2	4		
* Franklin St., from Pleasant west	6	1,452	1	6	4	5
" " " east	4	72				
Henry St., from Brookline east	4	283	1	4		

* In Franklin Street District. † In Sparks Street District.

LOCATION.	Iron Pipe.		Gates.		Fire Hydrants.	
	Size.	Length.	No.	Size.	No.	Size.
	in.	ft.		in.		in.
* Hancock St., from Green to Franklin	4	265	1	4		
Huron St., from Lakeview Av. east	4	310	1	4		
* Kinnaird St., from Bay east	6	31				
* " " " "	4	505	..	..	1	5
Mt. Auburn St., from Coolidge Av. east	6	165				
† " " Willard east	6	713	1	6	1	5
Mt. Vernon St., at North Av.	12	5				
" " "	10	5				
" " "	8	28				
" " "	6	13	..	..	1	5
" " "	4	12	1	4		
† Marsh Ct.	3	14				
† " "	1½	322				
Potter St., from Sixth west	8	583	..	..	1	5
Prison Point St., north end for hydrant	6	5	..	..	1	5
Richdale Av., from Walden east	6	144				
Saville St., near Appleton	4	60				
Salem St., formerly Auburn Ct.	1¼	85	1	1¼		
* Soden St., from Franklin south	4	206				
Sparks St., from Vassal Lane south	6	156				
† " " Mt. Auburn north	6	128	1	6	1	5
Thorndike St., from Second west	6	126	1	6	1	5
" " Third "	4	52				
Tremont St., from Broadway to Hampshire	6	1,063	2	6	4	5
Watson St., from Brookline west	4	135	1	4		
† Willard St., from Mt. Auburn north	6	397	..	..	1	5
Winter St., from Fourth to Fifth	6	506	1	6	2	5

* In Franklin Street District. † In Sparks Street District.

Recapitulation.

	12 in.	10 in.	8 in.	6 in.	4 in.	3, 1½, and 1¼ in.	Totals.
Length of iron pipe	5 ft.	5 ft.	611 ft.	9,196 ft.	4,167 ft.	507½ ft.	14,491½ ft.
Number of gates	..	..	..	13	15	2	30
" " hydrants	..	..	..	..	..	..	28

Main Pipe raised.

	6 in.	4 in.	3 in.	Totals.
Brown St.	..	209 ft.	..	209 ft.
Burns Ct.	..	..	202 ft.	202 "
Franklin St., near Soden	110 ft.	..	..	110 "
Sparks St., from Mt. Auburn north	412 "	..	..	412 "
Willard St., near Foster	90 "	..	..	90 "
			Total	1,023 ft.

New Supplies.

Galvanized pipe and brass fittings used Dec. 1, 1876, to Nov. 30, 1877, inclusive.

	4 in.	2 in.	1½ in.	1 in.	¾ in.	½ in.	Totals.
Length galv. iron pipe .	17½ ft.	136 ft.	200 ft.	615 ft.	5,274 ft.	. .	6,242½ ft.
Supplies	* 2	2	4	1	127	. .	136
Stop and waste . . .	. .	2	4	4	129	. .	139
Screw-cocks	. .	1	4	3	120	. .	128
Sidewalk cocks . . .	. .	1	4	2	125	. .	132
Corporation cocks . .	. .	. .	. .	1	6	. .	7
Gates	1	. .	. .	. .	. .	. .	1
Faucets	. .	. .	. .	. .	. .	7	7
Ludley valve	1	. .	. .	. .	. .	. .	1

The above number of new supplies added to the total number reported last year (6,820) gives the present total of supplies as 6,956.

Statement of Stock on Hand December 1, 1877.

For street mains (iron pipe and fittings).

Number of	48 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.
Straight pipes (12 feet each)	2	22	25	17	4	25	166	122	12	9	
Elbows	..	..	1	..	..	..	1	..	16		
Bends	..	1	2	1	1	..	16	..	..		
Y branches	..	..	1	..	..	1					
Sleeves	..	2	3	9	5	3	4	9	5	..	2
Clamp-sleeves	..	..	6	..	..	3	7	9	1	2	1
Offsets	..	..	..	..	..	..	6	..	17	3	
Drain offsets	..	..	..	..	..	..	..	..	24		
Gates	..	..	..	..	..	1	1	2	..	1	
Hydrants (Pattee & Perkins)	..	..	..	..	..	..	..	..	3	(5 in.)	
Check-valves (old)	..	..	2								
Crosses	..	..	..	..	..	1-12″	2-10″				
				1-20″	1-12″	2-10″	2-8″	2-8″	8-6″	13-4″	
				..	..	4-8″					
				..	..	4-6″					
				1-10″	..	4-4″	4-6″	4-4″	8-4″		
Ts	..	..	..	3-20″							
			1-24	1-12″	5-6″	1-12″	25-6″	9-6″	4-4″	22-4″	
			1-8	1-10″	..	1-8″					
			2-6″	2-6″	..	5-6″					
Reducers	..	..	..	1-12″							
			1-12″	1-10″	..	1-6″	6-6″	7-6″	2-4″	1-3″	
			1-10″	1-8″							
Blow-offs	..	..	..	2-6″							
Caps	..	..	..	2	..	6	1	6	6	6	
Plugs	..	..	..	..	..	..	..	2	1		

3,008 lbs. lead, 47 lbs. packing, 1 bbl. Roman cement, 4 hydrant boxes, 3 gate boxes.

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* One of these supplies is that to the Cambridge Cemetery Grounds, of which the length of cast-iron pipe laid, and the gates, are included in the preceding table of main-pipe used. The one-inch galvanized pipe and fittings laid at the Cemetery are included in this table, as is also 85 feet of one-inch galvanized pipe used for renewal of a supply with larger pipe, which renewal is not counted in the number of new supplies.

For supplies (galvanized pipe and brass fittings).

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
Length of galv. iron pipe	96 ft.	170 ft.	675 ft.	375 ft.	870 ft.	56 ft.
Elbows	...	30	25	30	143 – ¾″ 94 – ½″	45
Street elbows	...	...	...	30	130	
Couplings	110	150 – ¾″	61	118	5 – ½″	30
Unions	...	9	40	25	57	
Unions for lead pipe	...	...	...	...	12	
Crosses	...	30 – 1½″				
	25 – 1¼″	20 – 1¼″	20 – 1¼″	8 – 1″		
	...	15 – 1″	18 – 1″			
	20 – 1″	21 – ¾″	2 – ¾″	1 – ¾″		
Ts	35 – 2″	12 – 1½″	30 – 1¼″	...	199 – ¾″	
	40 – 1¼″	...	15 – 1″			
	12 – 1″	20 – 1¼″	8 – ⅝″	20 – 1″	134 – ½″	20 – ½″
Stopcocks	2	1				
Stop and waste cocks	...	...	...	25	80	
Screw-cocks	...	...	...	15	49	
Sidewalk cocks	...	...	...	70	71	
Corporation cocks	...	5	...	...	7	
Blow-off cocks	...	2				
Hydrant cocks	...	...	...	2	1	
Sill-cocks	...	...	...	...	3	
Cement pipe cocks	...	...	...	61		
Hose-bibbs	...	...	...	13	...	18
Compression bibbs	...	...	...	...	7	
Air-chambers	...	...	...	46	77	65
Socket-ends	...	...	...	...	171	
Lock-nuts	...	...	...	36	23	20
Nipples	...	...	56	...	...	150
Hose-nipples	...	...	...	...	10	
Plugs	3	20	5	35	1	
Clips	...	...	...	25	75	10
Bushings	4 – 1″					
Meters	2	...	...	...	1	

3 garden hydrants, 12 gate-spindles, 9 sidewalk stand-pipes. At pumping works: 850 tons of coal, tools in charge of engineer for machinist's repairs. At stable: 2 horses, 3 sets of harness, 4 wagons, 1 pung, 2 hand-carts, 1 hay-cutter. Tools in good condition: 1 large boom-derrick, 2 small derricks, 2 tool-chests, 62 picks, 156 shovels, 2 paving-rammers, 4 iron bars, 4 chains, 12 lanterns, 1 drilling-machine, one thread-cutting machine, 1 large hand-pump, 10 wheelbarrows, 1 platform scale, one grindstone, small tools for laying main and supply pipes.

REPORT

OF

THE SCHOOL COMMITTEE FOR 1877.

Economy of Management.

THE School Committee for 1877 has given special attention to the economical conduct of the schools. It belongs to the Mayor to point out the exact scale on which the expense attending public instruction has been carried, and with what reduction during the past year; but it is proper for the Committee also to record the share which it has had in maintaining public economy. In presenting its annual estimate to the City Council at the beginning of the current year, it called for $17,000 less than it had named at the corresponding period of the previous year, and more than $9,000 less than the actual expenditure of the previous year; by a comparison of the actual expenses of the current year with the expenses of the previous year, it will be seen that the reduction was nearly $22,000, while of the amount called for at the beginning of the year in anticipation of the needs of the schools, more than $12,000 remains unexpended. In the item of salaries, which constitutes the principal expense under the control of the Committee, there has been a saving the past year of more than $12,000, and by the action of the Committee in establishing the schedule of salaries for the coming year a further reduction of about the same amount will be effected.

A close attention to economy in all the departments controlled by the Committee has accomplished this reduction, and a similar care must always be exercised; but an examination of the expenditures, as distributed in their several items, will show that a considerable

reduction of expense is possible in two only of the items, viz., care and repair of school-houses, and instruction in the public schools. The expensive construction of many of our school buildings compels a corresponding scale of expense in the care of them; but the Committee has had frequent occasion to remark that in one particular there is an extravagance which ought to be abated. The present system of janitors, by which several buildings, not always in close neighborhood, are under the care of a single janitor, leads to a wasteful use of fuel, and a ruinous treatment of the furnaces and steam-heaters. The fires are made and kept up, not with sole regard to the use of each building, but with reference to the necessities of the janitor in charge of several buildings. The schools begin at the same hour, and in each the fire should be made and regulated at the same time; but this cannot be done so long as the janitor in charge has to make a circuit of several buildings. The consequence is that in one school at the hour of opening the heat is excessive, and in another the rooms are too cold; the furnaces are driven, and require constant repair, and the fuel is wasted instead of economized. This inequality of temperature gives rise, moreover, to frequent misunderstandings and much irritation. The sub-committee has no immediate control of the janitor, and there is a division of responsibility which does not work to the advantage of the schools. The evil has been partially corrected by the introduction of cards in the several rooms recording the temperature at different hours; but much remains to be done before this important matter is made right. The Committee has no wish to assume duties beyond those it now has, but a regard for the best interest of the schools suggests the inquiry whether it might not be desirable to make the janitors officers of the School Committee in the same manner as the truant officers now are. If this change is not made, the Committee respectfully suggests that an arrangement be made by which the care of one building only, except where two are in close proximity, should be assigned to a single janitor, who would not of course be required to give his entire time to the work.

Teachers.

The largest item of expense in the conduct of the schools is the cost of instruction. Within the past two years the salaries of teachers have twice been reduced, and a large reduction has thus been made in this item. The pay-roll for the two months ending

November 1, 1875, was $31,747.50, and at the corresponding time in 1877, $26,515; making a reduction of $5,232 on the first of the five annual payments, or more than $26,000 in the payments for a year.

The Committee has made this reduction only after thorough discussion of the subject, and the final result was not reached with unanimous consent. There can be no more important question before the Committee than one which relates to the efficiency and morale of the teaching force. The teachers make the schools, and any measure which impairs their usefulness is a blow struck at the heart of the system. The Committee does not hold its office to be primarily the conduct of the schools on the cheapest plan, but on the most efficient plan. Niggardliness in the payment of teachers is as fruitful of evil as extravagance, and a true economy in the management of our public schools must consist in the securing of competent teachers with fair salaries and a permanence of situation. The Committee regards the recent reduction of salaries as called for by the general reduction of salaries and incomes in other professions; and, having established a new scale adapted to the times, it considers the most important work in our schools at present to be such a supervision of the teachers as shall make it hard for an incompetent teacher to obtain a situation, and easy for one already in the service and found deficient, to be dismissed. It deprecates a continual readjustment of salaries as tending to keep the teachers unsettled, and to prevent the necessary absorption in school work. The long period of service enjoyed by some of the teachers in the Cambridge schools is an example of what is desirable in the whole body, for it brings experience and professional pride; but no permanence should be granted to inefficiency, and it is right that every safeguard should be erected against the admission of incompetent teachers or the re-appointment of those who have been proved and found wanting. There is at present no examination of candidates for the post of teacher in our public schools; the regulations require that when a vacancy occurs the sub-committee of the ward shall, after consultation with the Superintendent, fill such vacancy, and report the name to the Board for confirmation. Custom makes this nomination nearly identical with an appointment, the action of the sub-committee rarely being reversed by the full Board, and the confirmation occurring on the same evening as the nomination. It is not

often that the School Committee has any acquaintance with the person nominated, beyond the recommendation of the Committee that nominates, and it is plain that their vote in such a case is a mere formality. The Committee has been sensible of this defect, and two attempts have been made to remedy it. It has been proposed to adhere more strictly to the implied purpose in establishing a Training School, and select new teachers only from among those who have received a diploma in that school, and latterly an order was introduced and lost, which required that every name proposed should be first submitted to a special committee on nominations, and recommended by them before being adopted by the Board. Another method remains, which, in the absence of a careful examination, may in a degree reach the desired result. If every nomination were to lie over at least one regular meeting of the Board, while the nominee was employed at once by the sub-committee as a teacher on probation, an opportunity would be given for every member of the Committee to visit the school where the teacher was employed and by other means so acquaint himself with the person's qualifications as to be able to vote intelligently on the appointment. No change in text-books can be made without due notice and reference to a committee, with full opportunity for each member of the Board to examine the proposed book; and the appointment of a teacher is far more important, and requires closer scrutiny, than the introduction of a book.

With great care in the selection of new teachers, and a just and even compensation insuring a permanency of situation during good behavior, it still remains necessary to use every precaution to keep the standard of school work high. The spring and winter examinations are evidently intended to be examinations of teachers more even than of schools. Especially is this true of the examinations carried on in May, when the schools are divided amongst the members of the Committee, and visited at their discretion. This examination, pursued without previous special notice, is well adapted to discover the practical efficiency of the teachers and the general condition of the schools; but when it is considered that there are one hundred and sixty-four teachers in our schools, it is evident that the work of a single member of the Committee, in his share of the examination, is greater than can be satisfactorily accomplished by men having no more leisure than falls to the lot of most members

of the School Committee. He who undertakes to do his work thoroughly is obliged to confess, at the end of the month allotted, either that he has made superficial visits to all the rooms assigned him, and feels incompetent to express a confident opinion, or that he has carefully visited a few rooms and may have overlooked the very teachers whom it would have been well to see.

The examination in itself is very desirable, but it is impossible that it should be thorough or useful as it is now arranged. The difficulty seems to lie in the attempt that is made to do more than is necessary. All teachers and all rooms are better for being examined, but it is only the incompetent and the very faithful who require this special examination. It belongs to the local sub-committee to study the needs and the work of the schools under his charge, and by this means all the teachers and all the rooms are under inspection. But there are cases of teachers who do not seem to meet the requirements of the service, and a private examination of their work by one or more members of the Committee not resident in the ward would do much toward informing the Board as to the expediency of reappointing such teachers; and there are cases of special service where a teacher shows a marked faithfulness, and it is right that such a teacher's work should receive a similar special inspection, and commendation given before the full Board. It is possible that some system may be devised by which the yearly examination may be concentrated upon these two points. By some such means the corps of teachers may be kept up to a high standard of excellence, and inefficient ones dropped from the roll. It is never a gracious act to dismiss a teacher, and hasty judgment, which discharges a teacher and deprives her very possibly of obtaining employment elsewhere, should be avoided; but the duty of the Committee is first to the schools, and the interest of a teacher should never for a moment be considered when conflicting with the best interest of the school. To retain a teacher after she has been found unworthy is a wrong done to the children under her charge and to the community that expects the Committee to exercise precisely this supervision.

Primary Schools.

The attention of the Committee has been called to the condition of the Primary Schools, with reference to the need of some more compact organization. The Superintendent of Public Schools wrote of this in his last Report, and while no action, beyond the appoint-

ment of a committee to consider the question has been taken, the facts call for some change from the present system. Where there are but two teachers in a building, the evils that spring from a lack of concerted action are not so noticeable; but even then it seems clear that an economy of reporting and a responsibility in the decision of many questions which arise would be secured by having one teacher act as principal of the school. Where there are more than two teachers the need is very apparent of a head to the school who shall maintain the order of the building, decide as to the disposition of new scholars and the promotion of old ones, keep the record of the school, and determine the many questions which arise and are now unsettled or settled arbitrarily for lack of some one responsible person. Responsibility and position in such a case should be made the opportunity for acknowledging marked ability in the service. The importance of the place held by the primary teacher is fully recognized, and the Committee desires especially to apply to this branch of the service the considerations named above respecting the qualifications of teachers. It is more important that the teacher who has the first moulding of the child's mind and character should be competent and possessed of the faculty of teaching, than that the same ability should be met afterward. Whatever increases the real efficiency of the primary school tells upon the whole course of study in the higher grades. The Committee regards the city as fortunate in having so many primary schools, where the number of children within a single building is comparatively small. The herding together of a great number in a large building is a misfortune and a mistake; but since such schools do exist, it is desirable that the organization in them should be more complete.

Truant Officers.

The number of truant officers has been reduced from five to three, and the schools redistributed. This step has been taken in the interests of economy, and the change is too recent to allow the Committee to pronounce positively upon the success of the experiment. It has been thought that by restricting the work of the officers more closely to the intent of the office, all the necessary work formerly done by five members can be done by three, and it is desirable that they should receive the support of the citizens cheerfully in their office, since a reduction of officers means economy in the administration of the city government.

City School.

The Committee would call attention again to the injustice done to the pauper children, by associating them in the City School with children who have been sent to the almshouse as offenders. Each class ought to receive instruction, but it is impossible to class them together, without making the unfortunate suffer from contact with the vicious.

Sewing.

The teaching of sewing has been introduced into the two lowest classes of the Allston Grammar School, by vote of the Committee, a single teacher being employed on half-time. This experiment is the result of a petition repeatedly urged upon the Committee by ladies and others in the City, who have been desirous that sewing should be taught to the girls in our schools as a regular study. The Committee acceded to the request so far as to make the experiment upon a small scale; it has been in operation for a single term only, so that it is as yet too early to pronounce definitely upon its success; but the interest taken by the children who are taught, and by their parents, indicates a favorable regard on the part of a portion of the community most directly affected. It is very desirable that citizens generally should make themselves acquainted with the work as now carried on in the Allston School, by personal inspection as far as practicable. The Committee was unwilling to commit the City to a full introduction of the system, although it has been firmly established in Boston. The experiment is for a test, and in any discussion which may follow the proposal to continue the system, and extend it, the intelligent criticism of citizens is important and desirable. There is always a prejudice against the introduction of a new department in our educational system, and a proper reluctance to complicate an already elaborate course of instruction; but there is not, and never can be, a point reached in educational progress beyond which new ideas have no place, and the only question which the Committee wishes to ask and answer on this point is, if it is for the best interest of the public school.

Reading.

The Committee desires again to commend the interest shown by the Superintendent in quickening the life of the schools by intelligent variations from a fixed course of study. There is always a tendency in a city system to substitute routine for spontaneity, and the intro-

duction of devices by which the children are made to employ their minds upon new subjects related to their school work is valuable as helping to keep before the teachers a sense of the end of education, and as stimulating the minds of children to healthy and fresh exercise. The power to read is often taught in our schools without a corresponding instruction in the choice of reading. Our text-books are very apt to draw on third and fourth rate authors for their material, and a fleeting fashion becomes impressed on the child's mind, in place of the permanent in literature. The efforts made to direct the children in their choice of books outside of school-hours is a step in the right direction, and it would be well if some plan could be devised by which the first classes in our Grammar Schools could be introduced to the best literature, not necessarily in the way of analytical study, but of familiarity of intercourse. It cannot be too often urged that while the High School is theoretically the apex of the city public school system, the vast majority of boys and girls end their school life with the Grammar School, and their interests ought not to be sacrificed to those of the few who pass beyond into the High School. So far as possible, studies should be adapted in such a way that the Grammar School may contain the elements of a finishing school, and not exclusively of a preparatory.

The Committee renews its wish that citizens should make themselves personally acquainted with the working of the public schools. There is a constant tendency to mechanism and formality, which can be met in no better way than by the intelligent interest and criticism of the community.

All which is respectfully submitted,

FRANK A. ALLEN, *Chairman ex officio.*

ANDREW P. PEABODY,
HORACE E. SCUDDER,
EDWIN B. HALE,
EDWARD R. COGSWELL,
HENRY HINCKLEY,
JAMES H. HALL,
A. L. NORRIS,
JOHN O'BRIEN,
GEORGE R. BRINE,
ASA P. MORSE,
WILLIAM A. MUNROE,
WILLIAM H. ORCUTT,
EDMUND H. STEVENS,
WM. FOX RICHARDSON,
FRANK FOXCROFT,

School Committee.

TABULAR VIEW

OF

THE PUBLIC SCHOOLS OF CAMBRIDGE,

JANUARY 1, 1878.

Name of School.	Teachers.	Salary.	No. of Scholars Jan. 1, 1878.
High School,	Lyman R. Williston.....	$3,500	480
	William F. Bradbury.....	2,600	
	John Orne, jun.....	2,000	
	Theodore P. Adams.....	2,000	
	Solon F. Whitney.....	2,000	
	Charles G. Dana.....	800	
	Edward E. Bradbury.....	900	
	Mary F. Peirce	1,000	
	Emma A. Scudder.....	900	
	Hannah Gleason.....	900	
	Emma F. Munroe.....	900	
	Mary C. C. Goddard.....	900	
	Julia A. Keeler.....	800	
Allston Grammar,	Benjamin W. Roberts.....	2,150	480
	Lizzie B. Winnett	750	
	Emily R. Pitkin.....	650	
	Lucia E. Whiting.....	650	
	Hattie E. Keith.....	650	
	Hannah L. Hill.....	650	
	Ida G. Smith.....	650	
	Nettie Sargent.....	650	
	Caroline Close.....	650	
	Josephine M. Davis	500	
	Sarah A. Vinton.....	650	
Harvard "	Aaron B. Magoun.....	2,150	562
	Ada H. Wellington.....	750	
	Margaret B. Wellington...	750	
	Mary E. Wyeth.....	650	
	Lydia S. King.....	650	
	Susan F. Athearn.....	650	
	Margaret R. Hodgkins.....	650	
	Annie M. Leland.....	650	
	Susan E. Merrill.....	650	
	Emily F. Damon.....	650	
	Sarah E. Golden.....	650	
	Ellen Merrick	650	
	Mary F. Emerson.....	650	

TABULAR VIEW OF THE PUBLIC SCHOOLS. — *Continued.*

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1878.
Putnam Grammar,	James S. Barrell	$2,150	395
	Sarah M. Burnham	750	
	Anna B. Josselyn	650	
	Addie Stone	650	
	Eliza M. Hussey	650	
	Augusta G. Miriek	650	
	Annie Knapp	650	
	Eliza S. Getehell	650	
	Maria E. Spare	650	
	C. E. Doran	500	
Shepard "	Daniel B. Wheeler	2,150	439
	Fannie A. Cooke	750	
	Julia H. Osgood	650	
	Sarah A. Rand	650	
	Harriet L. Hayward	650	
	Emily F. Fessenden	650	
	Cora M. Wheeler	650	
	Ruth E. Lander	650	
	Dana A. Evelyth	650	
	Anna Osgood	650	
	Nellie A. Hutchins	650	
Thorndike "	Ruel H. Fletcher	2,150	490
	Ellen N. Parker	750	
	Martha A. Martin	650	
	Mary E. Nason	650	
	Isabella B. Tenney	650	
	Ella W. Clark	650	
	Grace W. Fleteher	650	
	Emma A. Hopkins	650	
	Abbie A. K. Howard	650	
	Lydia A. Whitcher	650	
	Abby S. Taylor	650	
Washington "	Daniel Mansfield	2,150	518
	Hattie T. Nealley	750	
	Luey A. Downing	650	
	Adeline M. Ireson	650	
	Abby M. Webb	650	
	Adelaide A. Keeler	650	
	Adelaide A. Keith	650	
	Adelia Dunham	650	
	Emma P. Eaton	650	
	Aroline B. Meek	650	
	Eliza A. Hale	575	
	Caroline H. Hazeltine	500	
Webster "	John D. Billings	2,150	603
	Gertrude E. Hale	750	
	Louise C. D. Harlow	650	
	Esther F. Hannum	650	
	May E. Towle	650	
	Charlotte M. Chase	650	
	Emily H. Phinney	650	
	Anna S. Lamson	650	
	Clara E. Matchett	650	
	Carrie M. Kingman	650	
	Alice Gray	650	
	Marion H. Burnham	650	

TABULAR VIEW OF THE PUBLIC SCHOOLS. — *Continued.*

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1871.
Boardman Primary,	Mary Agnes Lewis.....	$ 600	234
	Sarah E. Stewart.....	600	
	Augusta L. Balch.....	600	
	S. N. Chamberlain.....	600	
	Carrie A. Cooke.....	600	
Brattle "	Lucy C. Wyeth.....	600	50
Bridge "	Elizabeth E. Dallinger.....	600	75
	Emily C. Dallinger.....	600	
Dana "	Abby A. Lewis.....	600	92
	Maria F. Williams.....	600	
Dunster "	Sarah B. Waitt.....	600	62
	Susan E. Wyeth.....	600	
Felton "	Georgiana L. Backus.....	600	134
	Sarah L. Cutler.....	600	
	Frances Fabyan.....	500	
Gannett	Sarah J. Davis.....	600	191
	Estelle J. French.....	600	
	Anna M. Jones.....	600	
	Charlotte E. Mitchell.....	600	
Gore	Frances E. Pendexter.....	600	410
	Mary E. Hartwell.....	600	
	Addie M. Bettinson.....	600	
	Agnes M. Cox.....	600	
	Mary A. Bourne.....	600	
	Nellie L. Pike.....	600	
	Sarah D. Graham.....	500	
	Mary A. Shepard.....	500	
Harvard "	Ellen A. Cheney.....	600	94
	Helen M. Ward.....	600	
Holmes	Marianne M. Webb.....	600	187
	Eunice W. Field.....	600	
	Mary L. Bullard.....	600	
	Louisa G. Matchett.....	600	
Mason "	M. Lizzie Evans.....	600	102
	Alma A. Smith.....	600	
Otis "	Martha H. Butler.....	600	400
	Luvia Goodnow.....	600	
	Kate F. Wellington.....	600	
	Carrie H. Smith.....	600	
	Mary E. Smallidge.....	600	
	Fannie Allen.....	600	
	Ellen C. Walsh.....	500	
	Josephine M. Doherty.....	500	
Putnam "	Nellie F. Ball.....	600	55
Quincy "	Charlotte E. Jewell.....	600	91
	Talulah G. Abercrombie...	600	
Reed "	Lucy T. Sawyer.....	600	111
	Evelyn A. Sawyer.....	600	
	Hattie N. Keyes.....	600	
Riverside "	Elizabeth A. Tower.....	600	205
	M. Louise Akerman.....	600	
	Emma M. Newton.....	500	
	Florence M. Hayward.....	600	
Sargent "	Frances J. Harrod.....	600	160
	Mary A. Brown.....	600	
	M. Elizabeth Dickson.....	600	

TABULAR VIEW OF THE PUBLIC SCHOOLS. — *Continued.*

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1878.
Sargent "	Lizzie C. Capen.....	$ 600	
Willard "	Mary Ann Tarbell.....	600	402
	Mary E. Sawyer.....	600	
	Kate M. Lowell.....	600	
	Amelia Wright.....	600	
	H. Flora Hannum.....	600	
	Evelina Brooks.....	600	
	Laura Wright.....	600	
	Grace R. Woodward.....	600	
	Louise W. Harris.....	600	
Wyman "	Fannie E. M. Dennis.....	600	194
	Charlotte A. Ewell.....	600	
	Letitia M. Dennis.....	600	
	Martha C. Dickman.....	600	
Training School,	Anna C. Sullivan.....	900	216*
	Ella C. Whitney.....	650	
	M. Etta Arkerson.....	650	
	Emma B. Alley.....	650	
	Jeanie Prescott.....	650	
City "	Jeanie A. Norris.....	750	41
	Harriet A. Butler.....	650	

* Including the Training Class (12), a Grammar Class (46), and Primary Classes (158).

Teacher of Singing. — Nathan Lincoln	$ 2,000
Supervisor of Drawing. — Emma F. Bowler	800
Teacher of Sewing. — C. L. M. Bigelow	275
Superintendent of Schools. — Francis Cogswell . . .	2,700

SUMMARY.

Number of Pupils in High School	480
" " " " Grammar Schools	3,533
" " " " Primary Schools	3,460
	7,473

COST OF INSTRUCTION.

High School	$ 19,200	for each pupil,	$ 40.00
Grammar Schools . . .	62,775	" " "	17.77
Primary Schools	46,300	" " "	13.38
Music	2,000		
Drawing	800		
Sewing	275		
Salary of Superintendent . .	2,700		
	$ 134,050	for each pupil,	$ 17.94

Number of Pupils belonging to Public Schools, Jan. 1, 1878	7,473
" " " " " " " Jan. 1, 1877 . . .	7,554
Decrease	81

Average annual increase of Pupils from 1860 to 1874 inclusive	246
Decrease of Pupils, 1875	268
Increase " " 1876	6
Decrease " " 1877	81
Number of Schools	29
" " Teachers	174

REPORT

OF

THE SUPERINTENDENT OF SCHOOLS.

To the School Committee of Cambridge.

Gentlemen, — I respectfully submit the following as my Report for the year ending December 31, 1877; it being my Third Annual Report.

SUMMARY OF STATISTICS

For the School Year Ending December 31, 1877.

I. POPULATION.

Population of Cambridge by State census for 1875 . . . 47,838

The number of children in the City between five and fifteen years of age, May 1, 1877, was not ascertained.

II. SCHOOLS.

1 High School.	1 Training School.
7 Grammar Schools.	6 Evening Schools.
20 Primary Schools.	2 Evening Drawing Schools.

Whole number of Day and Evening Schools 37

III. SCHOOL-HOUSES.

For the High School	1
For the Grammar Schools	7
For the Primary Schools, including Training School . . .	18

IV. TEACHERS.

Number of teachers in High School	13
Male teachers, 6 ; female teachers, 7.	
Number of teachers in Grammar Schools	83
Male teachers, 7 ; female teachers, 76.	
Number of teachers in Primary Schools, including principal of Training School	75
Number of teachers in Evening Schools	43
Male teachers, 19 ; female teachers, 24.	
Number of teachers in Evening Drawing Schools	2
Whole number of teachers in Day Schools, including teacher of Music, teacher of Drawing, and teacher of Sewing	174

V. PUPILS.

Number of different pupils registered in the Day Schools during the year	9,521
Average number of pupils belonging to the Day Schools during the year	7,139
Average daily attendance of pupils in all the Day Schools	6,557
Per cent of attendance in all the Day Schools	91.8
Average number of pupils belonging to the High School	429
Average daily attendance in High School	407
Per cent of attendance in High School	94.9
Average number of pupils belonging to Grammar Schools	3,282
Average daily attendance of pupils in Grammar Schools	3,047
Per cent of attendance in Grammar Schools	92.8
Average number of pupils belonging to Primary Schools	3,421
Average daily attendance in Primary Schools	3,093
Per cent of attendance in Primary Schools	90.4
Number of different pupils belonging to Evening Schools, to January, 1878	682
Average attendance in Evening Schools, to January, 1878	375
Number of different pupils belonging to Evening Drawing Schools, to January, 1878	120
Average attendance in Evening Drawing Schools, to January, 1878	79
Number of pupils between five and fifteen years of age in the Day Schools, May, 1877	6,790
Number of pupils over fifteen years of age in the Day Schools, May, 1877	605
Number of pupils under six years of age in the Day Schools, May, 1877	554

Number of pupils graduated from Primary Schools, July, 1877	860
Number of pupils graduated from Grammar Schools, July, 1877	242
Number of pupils graduated from High School, July, 1877	60
Number of pupils from High School admitted to College	21
Number of pupils graduated from Training School, July, 1877	6
Number of pupils admitted to Grammar Schools, September, 1877	808
Number of pupils admitted to High School, September, 1877	181
Number of pupils admitted to Training School, September, 1877	12
Whole number of Private Schools	17
Number of pupils in Private Schools	1,269

Table Showing the Number in Each Course in the High School, December, 1877.

Year.	Classical Course.	Complete English.	Shorter English.	Number of Divisions.
Fifth	28	..	..	1
Fourth	27	55	..	3
Third	10	60	10	4
Second	102		5	4
First	154		29	8

Table Showing the Number in Each Class in the High School, December, 1877.

Year.	Boys.	Girls.	Total.	Per cent.
Fifth	20	8	28	.058
Fourth	37	45	82	.170
Third	24	56	80	.166
Second	49	58	107	.222
First	91	92	183	.381
Total	221	259	480	

Table Showing the Number in Each Class in the Grammar Schools, December, 1877.

[The numbers in this and the following table include only those scholars who were present at some session during the first two weeks of December; while those in the "Tabular View" include all who belonged to the schools, though absent on account of sickness or for other cause.]

Class.	Boys.	Girls.	Total.	Per cent.
First	136	167	303	.086
Second . . .	184	180	364	.103
Third . . .	290	301	591	.168
Fourth . . .	387	368	755	.215
Fifth	306	316	622	.177
Sixth . . .	421	452	873	.246
Total	1,724	1,784	3,508	

Table Showing the Number in Each Class in the Primary Schools, December, 1877.

Class.	Boys.	Girls.	Total.	Per cent.
First	482	469	951	286
Second . . .	567	515	1,082	.325
Third . . .	675	611	1,286	.387
Total . . .	1,724	1,595	3,319	

Table Showing the Average Age of the Pupils in Each Class in the Grammar Schools, May, 1877.

First.	Second.	Third.	Fourth.	Fifth.	Sixth.
14 yr. 11 mo.	14 yr. 1 mo.	13 yr. 4 mo.	12 yr. 4 mo.	11 yr. 6 mo.	10 yr. 8 mo.

VI. FINANCES.

Cost of instruction in the Public Schools	$146,905.00
Care and repairs of school-houses	22,971.75
Amount expended for alterations of school-houses	2,920.83
Cost of instruction in Evening Schools and in Evening Drawing Schools	4,669.28
Text-books and stationery for schools	4,705.38
Compensation of Secretary of School Committee	300.00
Amount of the salaries of Truant Officers	5,041.65
Incidental expenses for school purposes	1,050.58
Total expenditures for all school purposes	188,564.47
Deducting the receipts from the Hopkins Fund ($ 846.34), actual expenses for school purposes	187,718.13
Assessed value of real and personal estate, May, 1877	55,755,050.00
Ratio of expenses for school purposes to the valuation of 1877	.003

By comparing the above statistics with those of 1876, the following facts are obtained: The number of schools and the number of school-houses remain the same. In the number of teachers there has been an increase of one in the High School, a decrease of one in the Grammar Schools, and in the Primary Schools of three; and to the number of special teachers there has been added a teacher of sewing, making the whole number at the present time 174, in place of 176 a year ago. The attendance, taking the day schools together, has been substantially what it was last year, there being an increase in the average daily attendance of only sixty-five pupils, and no change in the per cent of attendance. The number of pupils present in the schools on the first of December last was only two larger than at the same date of the previous year. There has been, however, an increase in the High School and in the Grammar Schools, with a corresponding decrease in the Primary Schools. The number of persons belonging to the City on the first day of May, between the ages of five and fifteen years, was not ascertained this year as usual; therefore no comparison with previous returns can be made. The total expenditures for all school purposes have been less by $ 21,974.09 than for the year previous, the cost of instruction alone showing a decrease of $ 12,413. At the present rates of salaries the cost of instruction for the coming year will be $ 10,000 less than for the past year. The statistics of our schools, as now kept, are for a year beginning with the first of

January; consequently they are for parts of different school years. I do not find, after careful inquiry, that the Board of Education or other authorities require any facts that could not be given if the statistical and school year were made to correspond. Statistics for a complete school year would be more valuable and more easily kept than for the period now taken; and the returns would be made at a season of the year when other school duties are not pressing upon the time of the Superintendent. Nor is it an objection to this plan that the reports heretofore have shown returns for the first of January. The same practice can be continued.

Course of Study.

I do not propose to outline a course of study for Primary and Grammar Schools, but only to mention some changes that I should recommend were I called upon to revise our present course in these grades. In the first place, instead of having little children taught to print words, I would have them taught to write them, using the ordinary script letter. The script letter is certainly as simple in form as the printed letter, and I believe can be as easily learned. At any rate, the printed letter is used only one year before the script letter is substituted for it, and it seems to me that time is lost in teaching both. It is claimed that the practice of printing words is an aid in teaching the child to read the printed page. But I would not teach him to read from the printed page at first, but from the blackboard. Words cannot be changed from one part of the printed page to another, and therefore the child often seems to know a word when in reality he remembers it by its position on the page, and not by its form. On the blackboard, the arrangement of words and sentences can be changed again and again. The same words can be made into new sentences until the child knows them wherever he sees them. The words for the blackboard (but not the sentences) should be taken from the primers, for there should be several kinds in use, and not one only, which will soon be learned by rote.

In the second place, instead of naming a book, or a particular part of a book, for the reading in a given grade, I would make known the requirements by indicating the style and character of the pieces to be read. I would not say Hillard's Fourth Reader for the sixth class, but reading similar to that in Hillard's Fourth Reader.

Were this plan adopted, the reading for a while might not seem to be as good as it now is, but teachers would be led to give more careful thought to *methods* of teaching reading, and there would be a gain in the end. The question would then be, not how shall pupils be taught to read a particular piece or set of pieces with effect, but how shall they be taught that they may be able to decide for themselves how to express the meaning of any piece. It is one thing to tell a pupil to emphasize a particular word or give a particular inflection, to tell him the meaning of a word or its pronunciation, but quite another to teach him so that he shall be able to decide for himself what word should be emphasized, or what inflection given; or to teach him the use of his dictionary that he may find the meaning or pronunciation of any word. By the first method pupils can read with .proper expression only what they have been taught; by the second, whatever they can understand. For the purpose of training the voice and bringing out to some extent what may be called the graces of elocution, it is well to select passages and pieces to be read over and over again, both by teacher and pupils; but as an intellectual exercise there should be a wider range of reading than we now have in our schools. So long as pupils buy their own books, it will be necessary for the Committee to name the particular reading-book which shall be in general use; but copies of other books must be supplied in some way, or the best results will not be obtained.

In arithmetic, I would assign the work by topics and not by pages. Subjects or methods comparatively unimportant are found in all our text-books; time should not be spent upon these. The text-book should be used only as a convenience in teaching the subjects required. Mental arithmetic should be taught in connection with written arithmetic. The subjects should be the same, and the one should be an aid to the other.

The study of history in the Grammar Schools is confined to the first class, Anderson's Grammar School History being the text-book. Not only would I change the method of teaching history in the first class, but I would also make it a study in the lower classes. In the first class, I would have it taught by topics without reference to any particular text-book; in the lower classes, by reading lessons, a limited number of copies of suitable books being supplied by the City. Not more than one third of all the pupils entering the Grammar

Schools ever reach the first class. Under a government like ours, this fact alone is a sufficient reason for introducing history into the lower classes.

Geography is an interesting study, and would be a profitable one if our text-books did not contain so much which is comparatively unimportant, but which is so interwoven with the useful portion that it is almost impossible to separate the one from the other. This study is pursued through the whole course of the Grammar Schools; and, while I am not prepared to recommend any change, I raise the question whether one half the time now given to this study could not be better employed in other ways.

The study of technical grammar begins with the third class in the Grammar Schools; the teaching of language should begin with the lowest primary class. The slate and pencil should be in constant use in the lower grades, and pen and paper in the higher. I cheerfully bear testimony to the good work which has been done in this direction. The "Plan of Sentence Writing," however, should be somewhat changed. Pupils should be required more frequently to give expression to their own thoughts.

Our course of study in the main may be the best that can be arranged, but it is now several years since it was revised: I therefore recommend that during the coming year it receive careful consideration.

Reading.

I believe the time is not far distant when the reading of interesting volumes, not for the purpose of learning to read, but for that of cultivating a taste for reading, will form a part of the regular school work. When I look over the counters of our periodical stores and see the trash there displayed, when I examine the catalogues of our public libraries and find even there so much that is worthless, and then learn how great the demand is for reading of such a character, I feel that more should be done in our schools to awaken a desire and foster a love for the reading of such books as will be to the mind what wholesome food is to the body.

The home influence of many children is unfavorable to the formation of good habits in reading. The schools should seek not only to counteract this influence, but to exert a positive influence in the opposite direction. At the present time, reading for the purpose I have named has no assigned place in the work of the schools. Oc-

casionally books may be read in school hours, but the majority of pupils read, if they read at all, at their homes; and they read whatever happens to come in their way, without definite plan or purpose. Good results would not be expected in arithmetic or grammar, if pupils were left to follow their own inclination as to time and methods of study. It is systematic training that secures the good results. The child begins the study of numbers when he first enters school, and day by day receives instruction adapted to his advancement through a series of years. When drawing was first placed in the schools, our pupils had no conception of the forms of beauty hidden in the points of their pencils, but skilful teaching has revealed those forms, and the pencil now is a source of constant delight. Our teachers have done much by recommending books, and by frequent talks about them, to awaken an interest in this important subject. But the reading of instructive books as an educational influence is of too great importance to be left to such an extent outside the school-room. It should become, I believe, a part of the regular course of study, and receive the same thoughtful attention from teachers which is now given to other studies. Books of real merit which are now as sealed volumes to the young should be opened to them, and the rich veins of truth and the gems of thought should be revealed. Let a child once become interested in reading what is truly excellent, and he will no longer take delight in books of an inferior character.

Besides the reading of interesting books as a regular exercise under the instruction of the teacher, it might be well to place within the reach of pupils short articles to be read in school hours after their lessons have been thoroughly prepared. A person, in order to while away an unoccupied hour, will take up a book not at all to his taste which he would not read at another time; so children would gladly read in school what they would not look at when at home, and may thus perhaps begin to acquire a taste for good reading.

School Government.

The necessity for good order in schools is recognized by all; differences in opinion exist only as to methods of securing it. Till within ten years corporal punishment was frequently used as a means of discipline in all or nearly all the schools of the city; but for the past six or eight years the majority of our schools have been

carried on without resort to corporal punishment in any form, and it has not been so frequent as formerly in those schools where its use has continued. I do not hesitate to express the opinion that the condition of our schools during these last years will compare favorably in all respects with their former condition.

The rule of the School Board in reference to discipline is as follows: —

"It is enjoined on the instructors to exercise vigilant, prudent, and firm discipline, and to govern by persuasion and gentle measures, as far as practicable. No pupil shall be kept after school hours more than half an hour after each session. No scholar on entering the schools of the City shall be subject to corporal punishment in any form. But, if any scholar prove to be disorderly or refractory, on due notice to parent or guardian, and on the written consent of the Committee having charge of the school, such scholar shall be liable to corporal punishment during the remainder of the term

"Any instructor may suspend a pupil from school for violation of the School Regulations or the rules of the school, or for any other sufficient cause; but he shall immediately report the case to the parent or guardian of such pupil, and to the sub-committee of the school, or to the Superintendent of Schools, with a written statement of the cause of such suspension."

This rule virtually excludes corporal punishment from our schools three times each year, the year being divided into three terms. This can be done without injury to the schools, for the same restraints can at once be thrown around any pupil who fails to appreciate this kindly treatment. The rights of parents and of teachers are alike guarded by this rule. Parents who do not believe in the use of the rod as a means of discipline, either at home or at school, can place their children in the schools with full confidence that under no circumstances will they be subjected to corporal punishment until an opportunity has been given for their removal from school. At the same time the authority of the teacher is fully sustained; for on the written consent of the sub-committee of the school, any disorderly or refractory pupil may become liable to corporal punishment by simply notifying the parent, his *consent* not being required. And should the committee for any reason decline to give his consent, teachers have full power to suspend at once any pupil from school for violation of the School Regulations or the rules of the

school, or for any other sufficient cause. The rule, I believe, is a wise and judicious one; and under it, with a proper spirit pervading the community, our schools can be successfully managed without frequent resort to suspension from school, or to corporal punishment, if the latter be resorted to at all. If in the past the working of this rule has not been altogether satisfactory, it is partly due, I believe, to the influence of writings which have found their way into the public press, and to the unguarded remarks of parents made in the presence of their children. A great wrong is done to a child when you tell him that his father and mother are unworthy of his love. Better let him love them though they be unworthy. So with reference to teachers. Grant that they possess all the faults with which they may be charged, and even self-interest alone ought to prevent our doing or saying anything which would lessen the confidence which the pupil reposes in them. Not that evils should be endured if they exist, but they should be remedied in a proper way. No one claims that our teachers are perfect, but, as a body, in the words of an honored ex-mayor, I believe "they are faithful, competent, and worthy of the respect and support of all good citizens." If so, they should have that support; if not, the right means should be taken to fill their places with those that are worthy. Our teachers not only desire but seek the co-operation of parents. The following forms of letters used in our schools show one method by which this end is sought. For convenience in referring to them I will designate them as Nos. 1, 2, and 3.

Letter No. 1.

..... School, ... 187 .

Mr. .....

..... deportment at school is not satisfactory.

I think it best to inform you of the fact, and hope ..... will do better in the future.

More definite information can be obtained of me at Room No. .....

Respectfully,

..... *Teacher.*

To aid in maintaining good order, please sign and return this.

Place for signing. .....

Letter No. 2.

..... School, ... 187 .

Mr. .....

..... deportment continues unsatisfactory.

When ..... returns I should like to have you, or some suitable person, accompany ..... as an interview seems desirable.

Respectfully,

..... *Teacher.*

Room No. .....

Letter No. 3.

..... School, ... 187 .

Mr. .....

..... deportment still continues unsatisfactory.

Before ..... returns it will be necessary for you, or some suitable person, to see me, or some one having charge of the school.

Respectfully,

..... *Teacher.*

Room No. .....

These letters ought to be kindly received by the parent. Notice the spirit in which they are written. Letter No. 1 informs the parent that the deportment of his child is not satisfactory; that is, that he does many things which he ought not to do, and leaves undone many things which he ought to do. This being the case, it is thought best to inform the parent; for he more than any one else should be interested to know of the conduct of his child while intrusted to the care of others. And because the teacher has a right to expect that the parent's restraining influence will be added to his own, he expresses the hope that the child will do better in the future. Only the general statement is made that the child's deportment is unsatisfactory, for it would be difficult if not impossible, in most cases, to give the particulars in a written communication; but if more definite information is desired, the teacher is ready and willing to furnish it. To reply to these letters would be felt to be a burden by many a parent, therefore the name only is requested as evidence that the letters have been read.

When letter No. 1 fails to secure the desired object, the subject is again brought to the notice of the parent by letter No. 2. This

is similar in character to No. 1, except that the teacher asks an interview with the parent, or some suitable person. This last clause was added because it is not always convenient for parents to visit a school at a given time, and the purpose of these letters is not to annoy and trouble parents, but to secure their co-operation.

When letter No. 2 fails to secure the desired interview, or to affect the deportment of the child, letter No. 3 is sent, with the hope that the interview which must then take place before the child returns to school may result in the manifestation of a better spirit on the part of both parent and child. The co-operation of parents is also sought in reference to the work of school, as will be seen by the following form of letter: —

..... School, ... 187 .

Mr. .....

..... lessons have not been prepared to my satisfaction.

I think it best to inform you of the fact, that the influence of home may be added to that of the teacher, to the end that closer attention may be given to the work of school, unless there are circumstances in the case which render it undesirable.

Respectfully,

..... *Teacher.*

Please sign and return this.

Place for signing. .....

This letter certainly shows a purpose on the part of the teachers to allow no pupil to neglect his work, while at the same time it indicates no desire to press one beyond his strength and years.

I have written on this subject because I feel that many persons do not realize how well the teachers have met the difficulties incident to so radical a change in our methods of school management. But, in addition to the efforts of teachers and the support of the committee, there are two indispensable requisites to entire success in this direction, — cordial good-will in the community towards the schools, and a disposition on the part of parents to second all efforts made in the interest of good discipline and faithful study.

Examinations.

The rule of the School Board in reference to examinations is as follows: —

"The schools shall be examined publicly, once in each year, in the month of December, by the whole Board, or by sub-committees. The

examination shall be confined to the studies pursued during a specified period. At the next monthly meeting of the Committee after the annual examination, the results of the examination of each school shall be reported in writing by the member or members of the Committee previously appointed for that purpose. At the regular meeting of the Committee in April, each member of the Committee shall have certain schools assigned him for private examination, which examination shall be made without any previous announcement; and the reports of such examinations shall be made at the regular meeting of the Committee in June.

This rule provides for a public and a private examination yearly. The plan is a good one, and the public examinations as now carried on answer well the purpose for which they were designed. They are not intended as occasions for thorough inspection of school work, but as opportunities for parents and friends to visit the schools. The examinations, however, are not mere exhibitions. While teachers have freedom as to methods in presenting subjects, the subjects themselves are chosen by the Committee, and are known to the teachers only a few days before the time of the examinations. The regular work of the schools, therefore, is but slightly interrupted, while the influence of these examinations, or public days as they might be called, is, I believe, beneficial. As I have said, the plan of the examinations is a good one; but the private examinations as now conducted fail to secure the definite information which should be obtained. These examinations should be more thorough and critical; and their results should be placed before the Board in some definite form for future reference. Ten or fifteen different rooms cannot be visited in a single day, and the excellences and defects of each school carefully noted. So many different elements enter into the make-up of a good school, that impressions formed by a visit of half an hour might be essentially modified were the stay prolonged through an entire session. More time is needed for these private examinations. But, as I said in a former report, the time now spent is a serious tax upon any professional or business man, and it is hardly to be expected that additional time will be given. I therefore recommend that only a part of the schools be examined at the yearly private examinations. To carry out this recommendation no change in the present rule would be required. A Standing Committee of the Board has already been appointed to arrange for the public and private examinations, and to have the general super-

vision of those for promotion. This Committee might be instructed to include in the list of schools for examination those which the different members of the Board might, for any reason, think best to have examined. No uniform plan as to frequency of examinations need be followed. It would be well in some cases to have the same school examined two or three times by different examiners during the same year. Were it a school of special excellence, its influence would thereby be extended to other parts of the City; and were it an inferior one, the Committee would have fuller testimony as to the merits of the teacher. The reports of these examinations should be made upon some general plan, and should be preserved for a series of years. Printed blanks might be used, which would lessen the work of preparing the reports, and make them all the more valuable, as they would show the opinions of different examiners upon the same subjects. These reports would be of special service at the annual election of teachers, if objection should be made to the re-appointment of any candidates on the ground of dissatisfaction with their work.

General Remarks.

The only important changes made in the school-houses during the year have been the building of the long-needed recitation-room for the Bridge School, and the entire change of the heating apparatus at the Willard School-house. The Bridge School is now comfortably accommodated. The recitation-room is of good size, — about sixteen feet square, — and the main building has been newly shingled and repainted. The entire cost of the improvement was $325. At the Willard School-house, the recommendations of the Committee appointed to report on the sanitary condition of our school-houses were carried out so far as they related to the plan of warming the building, but not in reference to methods of ventilation. The recommendations were as follows: —

"That the radiators be removed from the rooms, and coils of pipe be placed in the basement, over which a proper amount of fresh air can pass, and be conducted to the rooms by pipes of large size. In place of the present system of wooden foul-air ducts, there should be a large shaft on each side of the entry, subdivided, if necessary, above the basement by thin partitions, and warmed in winter by a large coil of steam-pipes in the bottom. That part of these shafts which is in the cellar should be of brick, which will allow stoves to be put into them for summer use, without danger from fire."

Indirect radiation being substituted for direct, the air of the rooms must be better than before; still, I trust that the recommendations in full will he carried out at no distant day. Nearly three thousand dollars ($2,941.22) have been expended for the improvements already made. What I said in my last Report under the head of School Accommodations might be reprinted, with hardly a change of a word or figure (except what relates to the Bridge School) as a statement of the present wants of our schools. The part, however, which relates to the High School should be emphasized; for the increase of the school last September exceeded that of any previous year since 1865. Additional room being required, a division of the school was temporarily removed to the Harvard School-house. The need of more room for the City School, which was felt a year ago, no longer exists. Under the efficient management of the newly organized Board of Overseers of the Poor, the number of inmates at the Almshouse has been reduced during the year from 210 to 113, and the number of pupils in the school from 81 to 39. It may be a question, however, whether some change in the truant law is not needed.

The Evening Schools begin on the 1st of November, and continue till the 1st of the following April. This brings the first and last part of the term in different years. What has been said relating to them in previous Reports has been confined to the first part of the term. In order to present a more complete report than heretofore, I will give additional facts relating to last year. Of the 754 scholars belonging to the schools, with an average attendance of 290, 260 were present less than ten evenings, and 98 others less than fifteen evenings. The average number of teachers was thirty-nine. I am happy to say that the attendance in the schools the present season up to January, indicated greater interest on the part of the pupils. The same remark will also apply to the Evening Drawing Schools.

FRANCIS COGSWELL,
Superintendent of Public Schools.

ORDINANCES PASSED IN 1877.

An Ordinance in Amendment of the Ordinance concerning the Care and Management of the Bridge Charitable Fund.

THE Second Section of the Ordinance concerning the care and management of the "Bridge Charitable Fund" is amended by inserting after the words "elected annually" the words "in convention of the City Council."

[*Adopted, January* 24, 1877.]

An Ordinance in Amendment of the Ordinance in Relation to Police.

SECTION 1. Section 1 of Chapter 18 of the Revised Ordinances is hereby amended by inserting after the words "Night Police," in the third line, the words "six Sergeants of Police."

SECT. 2. Section 2 of the same chapter is hereby amended by inserting after the words "per annum," in the third line, the following, to wit: "that of the Sergeants of Police shall be two dollars and eighty-seven and one half cents per day."

[*Adopted, February* 21, 1877.]

An Ordinance in Amendment of an Ordinance in Relation to Sinking-Funds.

Section 4 of the Ordinance in relation to Sinking-Funds is hereby amended, by inserting in the tenth line thereof, between the words "on" and "the," the words "or before"; and by adding at the end of the last line the words, "and whenever any payment is so made before the 30th day of November, interest shall be paid thereon, at the rate of six per centum per annum, by the Commissioners on the Sinking-Funds, from the time of said payment until said 30th day of November."

[*Adopted, March* 21, 1877.]

An Ordinance in Relation to the Construction of Buildings.

SECTION 1. No building in this City, except manufactories and halls for public assemblies, shall be built or extended so that it shall be in a range of more than fifty feet without the intervention of a brick wall at least eight inches in thickness, except by permission of the City Engineer. Said wall shall be built up at least two feet above the flat of the roof of the highest building of which such wall forms a part, for the full extent of the flat, and the top of said wall shall be covered with a coping of stone or iron, or of other metal, and, where there is a mansard or a pitch roof, the wall shall be built up to the under side of the roof covering (that is, to the top side of the roof boarding), which shall be laid and imbedded in mortar upon said wall.

SECT. 2. The exterior walls of every brick building hereafter erected in this City, to be used for the purposes of a dwelling-house, shall be at least twelve inches thick to the second floor above the street, and eight inches for the remaining height, provided the building is not more than thirty feet from sidewalk to gutter, in which case the 12-inch wall shall go to the third floor. All floors and roofs to be anchored to walls not less than once in ten feet.

Every brick building, to be used for purposes other than a dwelling-house, and more than thirty feet in height, shall be constructed with walls of a thickness and character satisfactory to the officer named in the sixth section of this ordinance.

SECT. 3. All chimneys hereafter erected in this City shall be built from the ground, of brick, stone, or other fire-proof, non-conducting materials, and shall be built plumb, or nearly so, so as to be self-sustaining.

All brick flues shall be smoothly plastered inside with mortar, from top to bottom, and outside below the roofing, and hearths of fireplaces or grates shall be laid upon brick or other trimmer arches, or upon bars of iron supporting a bed of brickwork.

No woodwork of any kind shall be placed at a less distance than one inch from the outside brickwork of any flue, and in no case shall a nail be driven into the masonry of any flue.

SECT. 4. No smoke-pipe shall pass through stud or wooden partitions of any kind, whether the same be plastered or not, without being guarded either by a double collar of metal with at least four inches' air-space and holes for ventilation, or by a soapstone ring not

less than three inches in thickness, and extending through the partition.

No woodwork shall be placed at a less distance than one inch from any tin or other metal flue or flues, pipe or pipes, used or intended to be used to convey heated air in any building, unless such flues or pipes be cased with metal, leaving a free circulation of air all around the same.

SECT. 5. All buildings used for public assemblies or for manufacturing purposes, where more than twenty persons are employed, and all tenement houses intended for the occupancy of more than two families, shall be provided with fire escapes or two suitable ways of egress, accessible from every floor that is eighteen feet or more above the grade of the land immediately adjoining; said escapes or modes of egress to be satisfactory to the officer named in the sixth section hereof.

SECT. 6. The City Engineer shall have supervision over all matters provided for in this ordinance, and shall have authority to prescribe the character and thickness of the walls referred to in the latter part of Section 2, and the character of the fire-escapes or modes of egress referred to in Section 5 hereof. All permits given by him in reference to such matters shall be in writing. Parties dissatisfied or aggrieved by any decision or action of said City Engineer, as to matters placed under his charge by authority of this ordinance, may appeal to the Board of Mayor and Aldermen, whose decision in such cases shall be final.

SECT. 7. Any person or persons violating any of the provisions of this ordinance shall, upon written notice from the officer named in Section 6 hereof, served upon him or them, alter said building in conformity with the provisions of this ordinance within a reasonable period of time from said service. Any party or parties refusing or neglecting to comply with such notice shall be liable to a penalty of not less than twenty nor more than fifty dollars, and shall be restrained from further violation of this ordinance by provisions already established by law.

SECT. 8. The Ordinance adopted December seventh, in the year Eighteen Hundred and Seventy-six, entitled, "An Ordinance in Relation to the Construction of Buildings," and all ordinances inconsistent with this ordinance, are hereby repealed.

[*Adopted, April* 11, 1877.]

An Ordinance in Amendment of an Ordinance in Relation to the Fire Department.

Section 42 of Chapter 10 of the Revised Ordinances is hereby amended by striking out the word "Driver" after words "that of a," in the eighth line of said section, and substituting in place thereof the word "Engineer."

[*Adopted, April* 18, 1877.]

An Ordinance in Relation to the Boundaries of the several Wards, and the Number of Members of the Common Council to be elected by each Ward.

SECTION 1. The boundaries of the several Wards shall, until the month of October in the year Eighteen Hundred and Eighty-two, continue the same as now established.

SECT. 2. The members of the Common Council shall be apportioned as follows: —

Ward One shall elect four; Ward Two shall elect six; Ward Three shall elect four; Ward Four shall elect four; Ward Five shall elect two.

[*Adopted, October* 31, 1877.]

An Ordinance in Amendment of an Ordinance in Relation to the office of Auditor of Accounts.

SECTION 1. Section 3 of Chapter 1 of the Revised Ordinances is hereby amended by adding after the word "determine," in the fifth line thereof, the words "no person shall be eligible as Auditor who has been appointed or elected to any other office by the City Council, or either branch thereof, and an election or appointment of any person holding the office of Auditor of Accounts to any such office shall be a vacation of the office of Auditor of Accounts. The Auditor shall be removable at the pleasure of the City Council."

SECT. 2. This ordinance shall take effect on the first Monday of January next.

[*Adopted, November* 14, 1877.]

An Ordinance in Amendment of an Ordinance in relation to Accounts and Finance.

Chapter 1 of the Revised Ordinances is hereby amended, as follows: —

In Section 4, by striking out the words "Board of Aldermen," in the last clause of said section, and inserting in place thereof the words "Committee on Finance."

In Section 6, by adding the words "and no bill shall be approved by any Board or Committee, except at a meeting of that Board or Committee."

In Section 8, by inserting after the word "cost" in the sixth line thereof, the words "and properly entered in the records of the Committee whose approval they bear; and no bill shall pass from him to the Committee on Accounts unless found to be so entered."

[*Adopted, December* 5, 1877.]

An Ordinance in Amendment of an Ordinance in relation to the City Messenger.

Chapter 16 of the Revised Ordinances is hereby amended by adding a section, as follows: —

"SECTION 3. The City Messenger shall, acting under the direction of the Committee on Stationery and Printing, purchase all supplies of stationery required for the use of the City Council and departments acting thereunder. He shall keep a detailed account of all such purchases and deliveries from the same, and shall furnish each department only upon a requisition signed by the head of such department, and take a receipt therefor.

"He shall report to the City Council annually, or oftener, if called for, giving a detailed statement of purchases, deliveries, and stock on hand."

[*Adopted, December* 5, 1877.]

An Ordinance establishing the Salary of the City Clerk.

SECTION 1. From and after the first Monday of January, in the year One Thousand Eight Hundred and Seventy-eight, the salary of the City Clerk, in full for all services required of him by the charter

and ordinances of the City, and the laws of the Commonwealth, shall be three thousand dollars each year.

SECT. 2. The office of the City Clerk shall be kept open for public business each day, except Sundays and holidays, between the hours of eight in the morning and four in the afternoon.

SECT. 3. All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

[*Adopted, December* 26, 1877.]

An Ordinance in Relation to Accounts and Finance.

Auditor of Accounts.

SECTION 1. The City Council shall annually in the month of January, in convention, by joint ballot, elect an Auditor of Accounts, who shall be sworn to the faithful discharge of the duties of his office, and shall hold his office one year, and until another shall be chosen and qualified: removable, however, at the will of the City Council. His office shall be kept open for business between the hours of 8 A. M. and 2 P. M., and he shall receive an annual salary of fifteen hundred dollars, to be paid in equal quarterly payments, which shall be in full compensation for all services rendered in his official capacity. No person shall be eligible as Auditor who holds any other office under the City Government; and an election or appointment of any person holding the office of Auditor of Accounts to any such office shall be a vacation of the office of Auditor of Accounts. Whenever said office shall be vacant, the City Council shall fill the vacancy in the same manner as provided in this section for the annual election of Auditor of Accounts.

SECT. 2. The Auditor shall receive all accounts and claims from persons having demands against the City, which have been certified as hereinafter provided in Section 8, and shall carefully examine all such accounts and claims, and see that they are correctly cast and properly entered in the records of the committee whose approval they bear, and shall present the same, neatly folded, filed, labelled, and recorded, to the Committee on Accounts; but no bill shall pass from him to said committee unless found entered upon the records of the committee approving the same. He shall keep a book in such manner and form as the Committee on Accounts shall direct, wherein he shall record the date and amount of every account

and claim against the City presented as aforesaid and as finally corrected and allowed by said committee, and also the name of the person to whom the same shall be allowed, designating the fund or appropriation from which the same shall be paid; and the certificate of the said committee allowing such accounts or claims shall be made in the book where the same are recorded.

SECT. 3. The Auditor shall, under the direction of the Committee on Accounts, keep his accounts in such form and in such detail as may be necessary to a clear exhibit of all expenditures and receipts. He shall credit each City account with its appropriation for the financial year and with all revenue received on account of the same, and charge against the same the expenditures as they shall from time to time be allowed, as provided in the preceding section. Whenever any appropriation shall be expended the Auditor shall immediately give notice thereof to the Mayor, the City Council, and the Committee on Accounts, which committee shall not pass or allow any claim or account chargeable against such appropriation, until the City Council shall have provided the means of paying the same. The Auditor shall once in each month prepare a statement and furnish each member of the City Council a printed copy thereof, showing the condition of each City account, giving amount of appropriations and receipts, expenditures and unexpended balances, under the same.

SECT. 4. The Auditor shall countersign all the bonds, notes, and certificates of indebtedness issued for all loans to the City, authorized by the City Council, and also all orders drawn by the Mayor on the City Treasurer as provided in Section 11. He shall report to the City Council, under the direction of the Committee on Finance, during the month of December in each year, the expenditures and receipts during the preceding financial year, giving in detail the amount of appropriations and expenditures for each specified object and the receipts from each source of income, and the whole shall be arranged, as far as practicable, so as to conform to the accounts of the City Treasurer. He shall include in said report a statement of the funded and temporary loans and the rate of interest thereon, and shall exhibit all the liabilities and assets as shown on the books in his office at the close of the financial year; said statement shall be accompanied by a schedule of all property, real and personal, belonging to the City.

City Clerk.

SECTION 5. The City Clerk shall notify the Auditor of all orders passed by the City Council or Board of Aldermen, authorizing appropriations, expenditures, assessments, or abatements, immediately after such orders are approved. He shall also report to him, once at least in every month, all amounts received by him and paid to the City Treasurer on account of licenses, or fees of any description.

Standing Committees.

SECTION 6. All accounts or claims against the City, before being sent to the Auditor of Accounts, shall be examined; and if approved, certified by some board or committee, special or standing, as hereinafter provided: bills chargeable to the appropriation for

Bridges, — West Boston, Craigie's, and Prison Point, — by the Commissioner on Bridges.

Bridges, — other than the above, and

Street Department, — Construction, Paving, and Repairs, — by the Committee on Roads and Bridges of the Board of Aldermen.

Cemetery, — by the Commissioners of the Cemetery.

Dana Library, — by the Trustees of the Dana Library.

Fire Department, — by the Committee on Fire Department.

Care and Repair of School-houses and other Public Buildings, Shade Trees and Public Grounds, and such portion of Incidental Expenses as relates to Public Property, Surrendered Estates, and Burial Grounds, — by the Committee on Public Property.

Pauper Department, Almshouse, Collection of House Offal and Stone Ledge, — by the Overseers of the Poor.

Lighting Streets, — by the Committee on Lamps.

Police Department, — by the Committee on Police.

School Department, — Drawing Schools, Evening Schools, Text-books and Stationery, Salaries and Incidental School Expenses, — by the School Committee.

Sewers and Drains, — by the Committee on Sewers and Drains.

Watering Streets, — by the Committee on Watering Streets.

State Aid, — by the Committee on Soldiers and their Families.

Salaries of City Officers, — by the City Clerk and Committee on Finance.

Stationery and Printing, — by the Committee on Stationery and Printing.

Water-Works : Extension, Care and Repairs, and Supplies, — by the Water Board.

Engineering, — by the Committee on Engineer's Department.

Incidental Expenses, — except as hereinbefore provided for, and any other claim not clearly within the province of either of the above Committees, — by the Committee on Finance.

SECT. 7. The several boards and committees above mentioned shall have the general supervision and control of the appropriations made to meet the expenditures of their departments respectively, and the various officers more particularly charged with the disbursement of said appropriations shall advise with said boards and committees in relation to the making of such expenditures.

SECT. 8. The several boards and committees above mentioned shall hold regular meetings in the last week of each month for the examination and approval of bills ; shall keep a record of the names of the persons whose bills are approved, and of the dates and amounts of said bills. A majority of each of said boards and committees, except the School Committee, shall certify, by their signatures upon such bills, their approval of the same, and pass them to the Auditor on or before the first day of each month. All bills approved by the School Committee shall be certified by the Secretary, and at least three members of that Board. No bill shall be approved by any Board or Committee except at a meeting of which all the members belonging thereto have been notified, and at which there shall be a quorum present. The chairman of the several committees shall furnish to the Committee on Accounts monthly statements, as far as practicable, of the amount of all outstanding contracts and bills chargeable to their several appropriations.

Committee on Accounts.

SECTION 9. There shall be appointed in the month of January annually, a Joint Standing Committee on accounts, to consist of two members of the Board of Aldermen and three members of the Common Council, which Committee shall meet on or before the eighth day of each month, and carefully examine all accounts and claims against the City which shall be laid before them by the Auditor, and after comparing them with his record shall allow and pass the same if found to be properly entered, correct, and justly due ; but no bill shall be allowed or passed by said Committee unless the same shall bear the

written signatures of a majority of the Board or Committee (other than the School Committee, of which the certificate of the Secretary and three members at least shall be required) authorized on behalf of the City to make the contract, or cause the expenditure to be made; and when the Committee on Accounts has any doubt concerning the correctness of such bill or account, it shall not allow or pass the same until it shall have exhibited the same to the City Council with its objections, at their next meeting, for their consideration and final decision.

The Committee on Accounts shall direct the Auditor and the Treasurer and Collector as to the manner in which the books, records, accounts, and papers belonging to their several departments shall be kept.

Payment of Money.

SECTION 10. No money shall be paid out of the City Treasury except upon the written order of the Mayor, addressed to the Treasurer, countersigned by the Auditor, and numbered to correspond with the number of the account or claim it shall be drawn to pay.

SECT. 11. The Mayor is hereby authorized to draw orders on the Treasurer for the payment of all accounts and claims allowed and certified by the Committee on Accounts as provided in the preceding sections, and no other. *Provided, however,* he may without action by the Committee on Accounts draw his order to pay a sum not exceeding five hundred dollars by way of advance on contracts made, or on work begun and not completed, upon being satisfied of the necessity therefor by a certificate signed by a majority of the committee authorizing the expenditure. *And also,* to pay any sum of money due on the principal or interest of any note, bond, or other security of the City, or on any judgment against the City; but he shall not draw his warrant in payment for any services rendered or materials furnished beyond the sum specifically appropriated therefor by the City Council.

SECT. 12. Whenever any order is drawn the Auditor shall charge it under the appropriate head of expenditure, and report the same and the amount thereof to the Committee on Accounts at its next meeting.

City Officials.

SECTION 13. The Board of Overseers of the Poor, Commissioners of he Cambridge Cemetery, and all other City officers who shall, in

their official capacity, receive any money on behalf of the City, shall pay to the City Treasurer all the amounts so received once in every month, or oftener if required by the Mayor or City Council; and shall at the same time make a true return to the Auditor of Accounts of the amounts so paid, stating the account upon which such sum was received. All other persons who shall have money in their hands belonging to the City shall forthwith pay the same to the Treasurer.

Assessors of Taxes.

SECTION 14. The Assessors of Taxes shall, on or before the first day of September in each year, make a true return to the Auditor of Accounts of the amount of taxes named in the annual warrant placed in the hands of the Treasurer and Collector of Taxes for collection, and shall, upon the first day of each month thereafter, make a return to the Auditor of all other assessments made, and of all abatements allowed, with the names of persons and amounts allowed to each, during the preceding month. The Board of Assessors shall receive an annual salary of four thousand and five hundred dollars, to be paid in equal quarterly payments, as heretofore, which shall be in full for all services rendered in their official capacity, including those prescribed in this section.

Water Registrar.

SECTION 15. The Water Registrar of the Cambridge Water-Works shall, under the direction of the Water Board, make out the annual bills for water-rates, supplies, fines, shutting off and letting on water, and all other amounts due to the City on account of the Water-Works, and deliver the same, together with a book containing an accurate list of the names and amount of each bill, to the City Treasurer, on or before the twentieth day of June each year, and from time to time such other bills as may become due, for collection; the list and bills so furnished to be numbered to correspond with the numbers of the account on the Registrar's books, where the original charges are made. The Registrar shall, on the first day of every month, make a return to the Auditor of Accounts of the amounts of bills of each class placed in the hands of the Treasurer for collection, and also the amount that has been abated during the preceding month.

City Treasurer and Collector.

SECTION 16. The City Treasurer and Collector of Taxes shall be the collector of all rents, water-rates, and other sums payable to the City, not otherwise specially provided for. He shall distribute the annual bills for water-rates before the first day of July in each year, and shall proceed to collect the same in accordance with the ordinances of the City. He shall exhibit to the Water Registrar daily the amount of his receipts, with the names of persons paying and the number and amount of each bill paid. He shall also distribute and collect all other bills on account of the Water-Works which may, from time to time, be placed in his hands by the Water Registrar.

SECT. 17. He shall, under the direction of the Committee on Accounts, keep in books provided for that purpose an accurate and true account of all his receipts and payments on behalf of the City making the same conform as nearly as may be with the accounts kept by the Auditor. He shall credit each department or account with all sums received on its account, and shall charge to each all sums paid out on such accounts. He shall not pay any money out of the Treasury except upon orders of the Mayor drawn in the form hereinbefore prescribed in the tenth section.

SECT. 18. He shall, on the first day of every month, report to the Auditor a written statement in detail of all his collections, receipts, and disbursements during the preceding month, with the names of the persons of whom and on what account the same were received or paid. It shall be sufficient, in reporting the receipts for taxes, assessments, and water-rates, to state the amount received and the particular warrant, assessment, or account upon which the collection was made. He shall also report a true record of all discounts and abatements allowed during the month on taxes, assessments, water-rates, or other accounts.

SECT. 19. The City Treasurer and Collector shall give a bond in such a form as the City Solicitor shall approve, with sufficient sureties, to be approved by the Mayor and Aldermen, in a sum not less than forty thousand dollars, which bond shall be executed, approved, and delivered before he enters upon the duties of his office, and within ten days after his election. Should he fail to give such bond within the time herein required, the election shall be void, and a new election shall be had forthwith. In case of the death or insolvency of any of the sureties on any bond so given, the Treasurer

shall immediately give a new bond, with sufficient sureties, as hereinbefore provided; and if he shall fail to give such new bond within a reasonable time after notice to do so, it shall be sufficient cause for removal from office.

SECT. 20. Whenever any assessment, for defraying the expenses of constructing or repairing common sewers or main drains, or of completing sidewalks, shall be delivered to the City Treasurer for collection, he shall forthwith demand payment, in writing, of said assessments; and if any such assessments remain unpaid for three months after such demand, he shall collect the same by legal process.

SECT. 21. The City Treasurer shall in person, or by his clerk, make payments to each employee of the City, his authorized agent or attorney; shall take therefor the receipt of no other person than such employee, agent, or attorney; and may, whenever it becomes necessary to save loss of time to the employees, send a clerk with the necessary funds to such localities as may be convenient for paying the men.

SECT. 22. The City Treasurer and Collector shall receive an annual salary of three thousand five hundred dollars, to be paid in equal quarterly payments, which shall be in full compensation for all services rendered in his official capacity. *Provided, however,* that at the end of each quarter he shall make and give to the Auditor of Accounts a written statement subscribed by him, of all fees, charges costs and commissions of every kind and description allowed by law and received by him or any deputy collector, sheriff, deputy sheriff or constable acting under authority of law by his appointment, for collection of taxes, rates, betterments, assessments or otherwise during that quarter; and shall certify thereon that all moneys so received by him or them have been paid into the City Treasury. No part of any quarter's salary shall be paid to him until such statement and certificate shall have been so made and given, and the sums therein mentioned shall have been so paid into the City Treasury.

SECT. 23. The Committee on Finance may allow to the City Treasurer and Collector such reasonable sums from time to time as will reimburse him for expenses necessarily incurred in the employment of deputy collectors, sheriff, deputy sheriffs, or constables in the collection of poll and personal taxes.

SECT. 24. The City Treasurer and Collector shall appoint the clerks in his office subject to the approval of the Committee on Finance, and shall be answerable for their conduct in the discharge of their duties. Such clerks shall receive such compensation as the City Council may from time to time determine, and shall be removable at the pleasure of the City Treasurer and Collector or of the Committee on Finance.

SECT. 25. The office of the City Treasurer shall be kept open for business between the hours of 8 A. M. and 2 P. M. during the year.

Finance Committee.

SECTION 26. There shall be appointed, at the commencement of each municipal year, a Committee on Finance, consisting of the Mayor, two members of the Board of Aldermen, the President and five members of the Common Council, which Committee shall negotiate all loans to the City that shall be authorized by the City Council, and shall report the amount to the City Treasurer and City Auditor.

SECT. 27. The Committee on Finance shall, in the month of February annually, prepare and lay before the City Council an estimate of the amount of money necessary to be raised for the ensuing financial year, under the various heads of appropriation, and the ways and means of raising the same.

SECT. 28. The Committee on Finance shall, at the close of each municipal year, and as much oftener as they shall deem it expedient, examine and audit the accounts of the City Treasurer; and for that purpose shall have access to all books and vouchers in his possession, or in possession of the Auditor or any other officer of the City. The said committee shall not only compare said accounts with the vouchers therefor, but shall ascertain whether all moneys due the City have been collected and accounted for; they shall also examine all notes and securities in his hands belonging to the City, and make report thereof to the City Council.

SECT. 29. The City Treasurer and City Auditor shall make up their accounts to include the last day of November annually; and the financial year shall begin on the first day of December in each year.

SECT. 30. Whenever any bonds for the payment of money shall be issued under the authority of the City Council, such bonds shall

be signed by the Mayor and City Treasurer, and countersigned by the City Auditor.

SECT. 31. Chapters 1 and 27 of the Revised Ordinances, the ordinance entitled "An Ordinance in Amendment of the Ordinance in relation to accounts and finance," adopted December 15, 1874, the ordinance entitled "An Ordinance amending Chapter 1 of the Revised Ordinances," adopted September 30, 1875, the ordinance entitled "An Ordinance in amendment of an Ordinance amending Chapter 1 of the Revised Ordinances," adopted December 8, 1875, the second section of the ordinance entitled "an Ordinance in relation to payment of City employees," adopted March 15, 1876, the ordinance entitled "An Ordinance in amendment of an Ordinance in relation to the office of Auditor of Accounts," adopted November 14, 1877, and the ordinance entitled "An Ordinance in amendment of an Ordinance in relation to accounts and finance," adopted December 5, 1877, and all ordinances, parts of ordinances, and orders inconsistent herewith, are hereby repealed.

[*Adopted, January* 2, 1878.]

An Ordinance Establishing the Office of Assistant City Clerk.

SECTION 1. In the month of January, in the year Eighteen Hundred and Seventy-eight, and in the month of March annually thereafter, there shall be elected by the City Council, in joint convention, an Assistant City Clerk.

Said Assistant City Clerk shall be sworn to the faithful discharge of his duties. He shall hold his office for the term of one year, or until his successor is chosen, removable, however, at the pleasure of the City Council. He shall receive for his services the annual salary of one thousand dollars, payable quarterly.

SECT. 2. It shall be the duty of said Assistant City Clerk to assist the City Clerk in recording, indexing, and certifying mortgages of personal property, and assignments of wages, and also, if necessary, to attest documents as provided in the Second Section of Chapter Seventy-two of the Acts of the year Eighteen Hundred and Sixty-nine; and perform all other duties pertaining to the office of City Clerk, under the laws of the Commonwealth and Charter and Ordinances of the City, when thereto requested by the City Clerk, or when the office of City Clerk shall be vacant from any cause.

[*Adopted, January* 2, 1878.]

An Ordinance relating to the Board of Health.

SECTION 1. With the exception of the City Physician, no person shall be eligible to the office of member of the Board of Health of the City of Cambridge who holds any other office in the city. And the acceptance of such other office by any member of said Board shall be considered a resignation from the same, and create a vacancy which shall be immediately filled by a new appointment.

SECT. 2. This ordinance shall take effect on the first Monday of January, in the year Eighteen Hundred and Seventy-eight.

[*Adopted, January* 2, 1878.]

An Ordinance in Relation to Fees of City Officers.

SECTION 1. All fees and perquisites received by the City Clerk and City Solicitor, for any duties performed by either of them in his official capacity, shall be paid monthly into the City Treasury; and the salaries of said officers, as fixed by ordinance, shall be in full for all services rendered in connection with their respective offices.

SECT. 2. All fees, charges, and commissions, of every kind and description, allowed by law for the collection of taxes, betterments, rates, and assessments of every kind, to the City Treasurer and Collector, shall be collected and paid by said City Treasurer and Collector into the City Treasury, and shall become the property of the city.

SECT. 3. All fees, penalties, witness fees, moneys, or compensation received by the Chief of Police, or any member of the Police force, other than the salary fixed by ordinance, for any services rendered by them in their official capacity, except moneys or compensation received by them for special services, and except witness fees for testimony in courts without the limits of the City, shall be paid monthly into the City Treasury by the officer receiving the same, and the salary so paid by ordinance shall be in full for all services rendered by the Chief of Police, or any member of the Police force, during their respective terms of office.

SECT. 4. The City Clerk, Treasurer and Collector, and City Solicitor, shall annually, on the 30th of November, make return to the City Council of a detailed statement of all fees and perquisites received by each of them for the year ending with that date. And the

Chief of Police shall make a similar return of the fees and perquisites received by himself and each member of the Police force.

SECT. 5. All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

SECT. 6. This ordinance shall go into effect on the first Monday of January next.

[*Adopted, January* 2, 1878.]

An Ordinance in Amendment of An Ordinance in relation to the Water-Works.

SECTION 1. On and after the first Monday in January, 1878, all moneys due on account of the Water-Works shall be paid directly to the City Treasurer, instead of to the Water Registrar as heretofore.

SECT. 2. All ordinances or parts of ordinances inconsistent herewith are hereby repealed.

[*Adopted, January* 2, 1878.]

[The following ordinances passed in 1878, being of general interest, are here inserted.]

An Ordinance in relation to the Board of Health.

SECTION 1. In the month of January in the current year, the Mayor and Aldermen shall appoint two persons who shall serve on the Board of Health of the City, — one person for one year and one person for two years; and annually thereafter shall appoint one person to serve thereon for a term of two years. Any vacancy shall be immediately filled in like manner for the unexpired term.

SECT. 2. The persons so appointed shall serve without compensation, and their respective terms of office shall begin on the first Monday of February next succeeding their appointment.

SECT. 3. The Board shall have suitable accommodations and conveniences provided at the charge of the City, under the direction of the Committee on Public Property.

SECT. 4. The Board shall, on or before the tenth day of February in each year, submit to the Committee on Finance of the City Council an estimate in detail of the annual expenditure required,

and shall, in the month of December of each year, report to the City Council in detail an accurate account of all receipts and disbursements during the financial year of the City.

[*Adopted, January* 23, 1878.]

An Ordinance establishing the Office of City Physician.

SECTION 1. In the month of January, in the year Eighteen Hundred and Seventy-eight, and every third year thereafter, there shall be appointed by the Mayor and Aldermen a City Physician. He shall enter upon the duties of his office upon the first Monday of February next succeeding his appointment. He shall receive an annual salary of three hundred dollars, payable quarterly. He shall be removable at the will of the Mayor, with the approval of the Board of Aldermen. A vacancy shall be immediately filled in like manner at any time for the unexpired term.

SECT. 2. The City Physician, upon notice in writing from the Mayor or Chief of Police, shall examine into the nuisances, sources of filth, and causes of disease within the City, and inquire into all sources of danger to the public health, and report thereon to the Board.

SECT. 3. He shall supply the physicians of the City Institutions and Dispensary with vaccine virus at the expense of the City, to be charged to the expenditures of the Board of Health.

SECT. 4. He shall, when requested by the Mayor, Board of Aldermen, or Chief of Police, examine all candidates for appointment on the Police force; the condition of all officers absent from duty; all cases of injury whereby the City may become liable; and he shall examine into causes of death of persons dying with no physician in attendance.

[*Adopted, January* 23, 1878.]

An Ordinance in Relation to Office Hours at the City Hall.

Be it ordained by the City Council of the City of Cambridge, as follows: —

SECTION 1. On Saturdays the various offices at the City Hall shall be closed at 2 o'clock in the afternoon; provided, however, that in case of necessity, any office may be left open until a later hour, at the discretion of the head of the department occupying such office, or the Committee or Board having charge of such department.

SECT. 2. All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

[*Adopted, February* 27, 1878.]

Rules and Regulations of the Board of Mayor and Aldermen of the City of Cambridge, in relation to Hackney Carriages, Trucks, Wagons, and other Vehicles, within the limits of the City.

SECTION 1. The Board of Mayor and Aldermen will from time to time grant licenses upon such terms as they may deem expedient, to any persons, residents of the City, or permanently engaged in business therein, to have a stand for a hackney carriage, truck, wagon, or other vehicle, within the limits of the City, and they may revoke such licenses at their own discretion, and a record of all licenses as granted shall be kept by the City Clerk.

SECT. 2. For every license so granted there shall be paid to the City Clerk the sum of two dollars for the use of the City; and all sums so received shall be paid over to the City Treasurer monthly.

SECT. 3. All licenses granted as aforesaid shall expire on the first day of May next after the date thereof, and no license shall be sold, assigned, or transferred without the consent of the Board of Mayor and Aldermen, indorsed thereon by the City Clerk.

SECT. 4. No stand of any vehicle shall be allowed in front of the premises of any abutting owner or occupant, without the consent of such owner or occupant.

SECT. 5. No owner, driver, or other person, not licensed as aforesaid, having charge of any hackney carriage, truck, wagon, or other vehicle, shall stand with such carriage, truck, wagon, or other vehicle, in any square, street, lane, alley, or public place within the City, an unnecessary length of time; and no person licensed as aforesaid shall stand for employment with his carriage, truck, wagon, or other vehicle in any street, square, lane, alley, or public place within the City, other than the stand assigned to such carriage, truck, wagon, or other vehicle by the Board of Mayor and Aldermen, under a penalty of not less than two dollars, nor more than twenty dollars for each offence.

SECT. 6. Every hackney carriage licensed as aforesaid shall be marked on the outside and upon each side on the sill or rocker, immediately below the doors, with the number of the license in white, gilded, or plated figures in the Arabic character of not less than one and a half inches in size, on a dark ground, or with a dark figure of

the same kind and size upon a light ground. And if any owner or driver of any such hackney carriage shall use or drive the same, or permit the same to be used and driven, without complying with the foregoing requisitions, said owner or driver shall be liable to a fine not exceeding twenty dollars for each offence.

SECT. 7. Every wagon, cart, or other vehicle licensed as aforesaid, except hackney carriages, shall have placed upon the outside, and upon each side of the same, the name of the owner and the number of the license, in plain, legible words and figures of not less than one and one half inches in size, and so that the same may be distinctly seen; and if the owner or driver of any such vehicle shall use the same without having the name and number so placed as aforesaid, he shall be liable to a fine not exceeding twenty dollars for each offence.

SECT. 8. No owner, driver, or other person having charge of any vehicle licensed as aforesaid to stand in any particular place, shall leave such vehicle and horses upon the stand, unless in the care of some suitable person, under a penalty of not exceeding twenty dollars for each offence.

The person in whose name a license is taken out under these rules and regulations shall be considered the owner of the vehicle licensed, and liable to all penalties herein contained, until such license expires, is revoked, or surrendered by the person taking out such license.

The Chief of Police is charged with the enforcement of these Rules and Regulations.

[*Adopted, April* 4, 1877.]

MAYORS

OF

THE CITY OF CAMBRIDGE.

FROM 1846 TO 1878.

James D. Green,	from May,	1846,	to	April,	1848.
Sidney Willard,	" April,	1848,	"	April,	1851.
George Stevens,	" April,	1851,	"	April,	1853.
James D. Green,	" April,	1853,	"	April,	1854.
*Abraham Edwards,	" April,	1854,	"	January,	1855.
Zebina L. Raymond,	" January,	1855,	"	January,	1856.
John Sargent,	" January,	1856,	"	January,	1860.
†James D. Green,	" January,	1860,	"	July 24,	1861.
‡Charles Theo. Russell,	" July 31,	1861,	"	January,	1863.
George C. Richardson,	" January,	1863,	"	January,	1864.
Zebina L. Raymond,	" January,	1864,	"	January,	1865.
J. Warren Merrill,	" January,	1865,	"	January,	1867.
Ezra Parmenter,	" January,	1867	"	January,	1868.
Charles H. Saunders,	" January,	1868,	"	January,	1870.
Hamlin R. Harding,	" January,	1870,	"	January,	1872.
Henry O. Houghton,	" January,	1872,	"	January,	1873.
Isaac Bradford,	" January,	1873,	"	January,	1877.
Frank A. Allen,	" January,	1877,	"	January,	1878.
Samuel L. Montague,	" January,	1878.		Now in office.	

* Municipal year changed.

† Resigned.

‡ First elected by the City Council.

GOVERNMENT

OF

THE CITY OF CAMBRIDGE.

1878.

MAYOR.

HON. SAMUEL L. MONTAGUE.

ALDERMEN.

EDWIN H. BLAKE.
BENJAMIN F. DAVIES.
RUSSELL S. EDWARDS.
JAMES A. FOX.
JOSHUA G. GOOCH.
EDWARD KENDALL.
MARTIN L. SMITH.
SIMEON SNOW.
GEORGE F. WHITING.
AARON R. WILLEY.

ALDERMEN, BY WARDS.

Ward	1.	Aldermen GOOCH and WILLEY
"	2.	" SMITH and SNOW.
"	3.	" BLAKE and DAVIES.
"	4.	" FOX and KENDALL.
"	5.	" EDWARDS and WHITING.

CLERK.

JUSTIN A. JACOBS.

COMMON COUNCIL.

GEORGE S. SAUNDERS, *President.*

JOHN CLARY.
MICHAEL CORCORAN.
JAMES F. DAVLIN.
WILLIAM H. DODGE.
WILLIAM E. DOYLE.
WOODWARD EMERY.
NATHAN G. GOOCH.
GEORGE W. GOODNOW.
CHARLES E. HANCOCK.
RUFUS LAMSON.
JOHN MCSORLEY.
ISAAC A. NAY.
EDWARD T. NICHOLS.
SAMUEL NOYES, JR.
SILAS RHOADES.
GEORGE S. SAUNDERS.
JOSEPH W. SMITH.
NATHAN UNDERWOOD.
JAMES F. WILKINSON.
HENRY D. YERXA.

COMMON COUNCIL, BY WARDS.

Ward 1. Messrs. EMERY, GOOCH, SAUNDERS, and WILKINSON.
" 2. Messrs. GOODNOW, LAMSON, NAY, NOYES, RHOADES, and SMITH.
" 3. Messrs. CLARY, DAVLIN, DOYLE, and MCSORLEY.
" 4. Messrs. DODGE, HANCOCK, NICHOLS, and UNDERWOOD.
" 5. Messrs. CORCORAN and YERXA.

CLERK.

J. WARREN COTTON.

PAGE.

WILLIAM PEARSON.

CITY CLERK.

JUSTIN A. JACOBS.

ASSISTANT CITY CLERK.

WALTER W. PIKE.

CITY MESSENGER.

FRANCIS L. PRATT.

COMMITTEES OF THE CITY COUNCIL.

JOINT STANDING COMMITTEES.

On Finance.

	Common Council.
The Mayor.	The President.
	Nathan G. Gooch.
	Rufus Lamson.
Aldermen.	William E. Doyle.
George F. Whiting.	Edward T. Nichols.
Martin L. Smith.	Henry D. Yerxa.

On Public Instruction.

Aldermen.	Common Council.
Edward Kendall.	The President.
Aaron R. Willey.	Woodward Emery.
	Nathan Underwood.
	Charles E. Hancock.

On Ordinances.

Aldermen.	Common Council.
James A. Fox.	Woodward Emery.
Edwin H. Blake.	Joseph W. Smith.
	John McSorley.

On Accounts.

Aldermen.	Common Council.
George F. Whiting.	John Clary.
Joshua G. Gooch.	Woodward Emery.
	Isaac A. Nay.

On Public Property.

Aldermen.	Common Council.
Joshua G. Gooch.	Silas Rhoades.
Benjamin F. Davies.	Charles E. Hancock.
	Michael Corcoran.

On the Almshouse.

Aldermen.	Common Council.
Martin L. Smith.	Henry D. Yerxa.
Russell S. Edwards.	William H. Dodge.
	Nathan Underwood.

On Roads and Bridges.

Aldermen.	Common Council.
Russell S. Edwards.	John McSorley.
Simeon Snow.	Silas Rhoades.
	George W. Goodnow.

On Fuel.

Aldermen.	Common Council.
Benjamin F. Davies.	William E. Doyle.
Martin L. Smith.	Nathan G. Gooch.
	Samuel Noyes, Jr.

On Lamps.

Aldermen.	Common Council.
Russell S. Edwards.	Nathan Underwood.
Benjamin F. Davies.	Isaac A. Nay.
	James F. Davlin.

On Watering Streets.

Aldermen.	Common Council.
Simeon Snow.	Samuel Noyes, Jr.
James A. Fox.	James F. Davlin.
	James F. Wilkinson.

On Printing.

Alderman.	Common Council.
James A. Fox.	Michael Corcoran.
	James F. Wilkinson.

On the Fire Department.

Aldermen.	Common Council.
Martin L. Smith.	Rufus Lamson.
Edward Kendall.	William H. Dodge.
	John Clary.

On City Engineering.

Aldermen.	Common Council.
Aaron R. Willey.	George W. Goodnow.
Edwin H. Blake.	Joseph W. Smith.
	Samuel Noyes, Jr.

On Assessors' Department.

Alderman.	Common Council.
Edwin H. Blake.	Isaac A. Nay.
	John McSorley.

JOINT SPECIAL COMMITTEE.

On Soldiers and their Families.

Aldermen.	Common Council.
Benjamin F. Davies.	Joseph W. Smith.
Joshua G. Gooch.	James F. Davlin.
	James F. Wilkinson.
	Edward T. Nichols.
	Michael Corcoran.

STANDING COMMITTEES OF THE BOARD OF MAYOR AND ALDERMEN.

On Police.

The Mayor.
Edward Kendall.
Edwin H. Blake.
George F. Whiting.

On the Fire Department.

Martin L. Smith.
Edward Kendall.
George F. Whiting.

On Roads and Bridges.

Russell S. Edwards.
Simeon Snow.
Joshua G. Gooch.

On Sewers and Drains.

Edward Kendall.
Aaron R. Willey.
James A. Fox.

On Licenses.

Edwin H. Blake.
Russell S. Edwards.
Simeon Snow.

On Health.

James A. Fox.
Aaron R. Willey.
Simeon Snow.

On Bonds.

Joshua G. Gooch.
Aaron R. Willey.
Benjamin F. Davies.

STANDING COMMITTEES OF THE COMMON COUNCIL.

On Elections and Returns.

William H. Dodge. Edward T. Nichols.
Henry D. Yerxa.

On Bills in the Second Reading.

Silas Rhoades. George W. Goodnow.
John Clary.

On Enrolled Ordinances.

Nathan G. Gooch. Charles E. Hancock.
William E. Doyle.

Clerk of Committees.

John McDuffie.

BOARD OF HEALTH.

Henry P. Walcott, *City Physician.*

One Year.	Two Years.
George F. Piper.	Daniel H. Thurston.

Health Officer.

Edward R. Cogswell, M. D.

HEALTH OFFICERS.

Frederick W. Hagar. Benjamin F. Bridden.
Timothy Ames. Amos Jones.
Warner W. Simonds. Leonard Shackford.
Andrew G. Smith. Thomas D. Cook.
Charles B. Jones.

SURVEYORS OF HIGHWAYS.

The same persons who compose the Board of Mayor and Aldermen.

AUDITOR OF ACCOUNTS.

Samuel E. Chandler.

TREASURER.

William W. Dallinger.

ASSESSORS.

Levi L. Cushing. Artemas Z. Brown.
Andrew J. Green.

ASSISTANT ASSESSORS.

Thomas Stearns. George L. Mitchell.
John S. Pollard. Benjamin F. Nourse.
Milton L. Walton.

SCHOOL COMMITTEE.

Samuel L. Montague, Mayor, *ex officio, Chairman.*

Ward I.

Andrew P. Peabody. Horace E. Scudder.
John Wilson.

Ward II.

James H. Hall. Edward R. Cogswell.
Henry Hinckley.

Ward III.

George R. Brine. John O'Brien.
George A. Coburn.

Ward IV.

Asa P. Morse. William A. Munroe.
William H. Orcutt.

Ward V.

Edmund H. Stevens. William Fox Richardson.
Frank Foxcroft.

Secretary.

W. W. Wellington.

SUPERINTENDENT OF SCHOOLS.

Francis Cogswell.

OVERSEERS OF THE POOR.

The Mayor, *ex officio, Chairman.*

One Year.
Charles E. Vaughan.

Two Years.
Sumner Albee.

Three Years.
Jonas C. Wellington.

Four Years.
George D. Chamberlain.

Five Years.
Ezra Parmenter.

Clerk.
David P. Muzzey.

WARDEN OF THE ALMSHOUSE.

William E. Hough.

PHYSICIAN OF THE ALMSHOUSE.

James R. Morse, M. D.

CAMBRIDGE CEMETERY.

Commissioners.

The Mayor, *ex officio.*

George T. Gale.
William Page.
George S. Saunders.
Curtis Davis.
George R. Brine.
John M. Tyler.

Superintendent.
James K. Farwell.

TRUSTEES OF DANA LIBRARY.

The Mayor, *ex officio, Chairman.*

Alderman.
James A. Fox.

Common Council.
Isaac A. Nay.

Citizens at Large.
John S. March.
Hersey B. Goodwin.
Edward P. Tucker.

Librarian.
Miss Almira L. Hayward.

Secretary.
John S. March.

CAMBRIDGE WATER BOARD.

The Mayor, and President of the Common Council, *ex officio*.

J. Warren Merrill. Henry L. Eustis.
Chester W. Kingsley. George P. Carter (*President*).
John H. Leighton.

Clerk.

Justin A. Jacobs.

SUPERINTENDENT OF WATER-WORKS.

Hiram Nevons.

WATER REGISTRAR.

J. Warren Cotton.

TRUSTEES OF SINKING-FUND OF WATER LOAN.

The Mayor, City Treasurer, and President of the Common Council.

COMMISSIONERS ON SINKING-FUNDS OF THE CITY.

One Year.

Samuel Slocomb.
Frank A. Allen.

Two Years.

John M. Tyler.
Joseph A. Holmes.

Three Years.

Charles H. Saunders. Robert Douglass.

TRUSTEES OF THE SANDERS TEMPERANCE FUND.

The Mayor, and President of the Common Council, *ex officio*.

Alderman.

Martin L. Smith.

Common Council.

Silas Rhoades.
Woodward Emery.

TRUSTEES OF THE BRIDGE CHARITABLE FUND.

The Mayor, and President of the Common Council, *ex officio.*

Alderman.

Joshua G. Gooch.

TRUSTEES OF THE DOWSE INSTITUTE.

The Mayor, and President of the Common Council, *ex officio.*

William W. Wellington. William A. Bullard.

Frank A. Allen.

REPRESENTATIVES IN GENERAL COURT.

Edwin B. Hale.
Levi L. Cushing.
Lucius R. Paige.
Oliver J. Rand.
Charles F. Thurston.
Joseph J. Kelley.

POLICE COURT.

Standing Justice.

John S. Ladd.

Special Justices.

Henry W. Muzzey. Woodward Emery.

Clerk.

Thomas McIntire.

CITY SOLICITOR.

John W. Hammond.

CITY ENGINEER.

William S. Barbour.

COMMISSIONER ON WEST BOSTON, CRAIGIE'S, AND PRISON POINT BRIDGES.

Ezra Parmenter.

SUPERINTENDENT OF STREETS.

Sumner P. Shepherd.

SUPERINTENDENT OF LAMPS.

Benjamin F. Nourse.

BOARD OF ENGINEERS.

Chief Engineer.

Patrick H. Raymond.

Assistant Engineers.

First Assistant	Thomas J. Casey.
Second Assistant	Richard F. Tobin.
Third Assistant	Nathaniel W. Bunker.
Fourth Assistant	Charles W. Brackett.

Clerk of the Board.

Nathaniel W. Bunker.

POLICE DEPARTMENT.

Chief of Police.

Frederick W. Hagar.

Captains of Police.

District I.

Timothy Ames.

District II.

Warner W. Simonds.

District III.

John L. Boynton.

Captain of Night Police.

Mark J. Folsom.

Sergeants of Police.

District I.

Thomas D. Cook.
Andrew Sproul.

District

George H. Copeland
William Twist.

District III.

Matthew R. Moore.
William Mullett.

Policemen.

District I.

James B. Morse.
Micah W. Cook.
Andrew G. Smith.
George A. Marston.
Benjamin Kennard.
L. J. Cloyes.
James Miller.
Patrick Doyle.
Leonard Shackford.
Daniel Callahan.
William H. Fitzpatrick.
Frederic B. Pullen.
Albert D. Cleveland.
Henry M. Tyler.
Alonzo S. Harriman.
Thomas W. Penney.
William Evans, jun.
Charles A. Brown.
Hugh McNamee.

District II.

Benjamin F. Bridden.
James H. Parks.
George Wood.
Luther Hapgood.
Simon D. Hiscock.
Rufus S. Downe.
Thomas H. Lucy.
Daniel Sherman.
George S. Dudley.
Charles B. Jones.
James E. Murray.
John Little.
Thomas S. Hall.
Charles S. Dixon.
William Nickelson.
Laurence J. Ducey.
Michael A. Dalton.
James S. Dailey.
James S. Alexander.

District III.

Dennis Corcoran.
Moses W. Hooper.
John F. Murray.
Amos Jones.
David N. McCleary.
Frank W. Scobey.
William Hawkins.
Warren A. Eaton.
Otis Dennison.
John W. Skelley.
William F. Batchelder.

Policemen (without pay).

P. H. Raymond.
Thomas J. Casey.
Daniel O'Connell.
Thomas H. Eames.
Edward F. Belcher.
John Coffee.
Joseph A. Pike.
Charles H. Barker.
Eben Pratt.
John H. McDermott.
James F. Dunn.
Roland Litchfield.
Charles L. Russell.
G. C. W. Fuller.
J. L. P. Ackers.
James C. Wilder.
Thomas McIntire.
James K. Farwell.
Hiram Nevons.
James M. Learned.
George Dale.
Jesse H. Kittredge.
George Smyth.
Samuel F. Hunt.
George J. Sutton.
Patrick Dunnigan.
Augustus W. Melvin.
William H. Grieves.
Joshua S. Sanborn.
William A. Norris.
John Loughrey.
Thomas Cowan.
Noah M. Cofran.
Alex. F. Shepherd.
William Hunnewell.
William T. Gibson.
John A. Leighton.
Francis A. Osborn.
Lewis Pratt.
C. W. Brackett.
W. H. Cox.
Daniel R. Melcher.
Fred. H. Greenwood.
Frank J. Curtis.
Benjamin F. Livingston.
Charles A. Gay.
James W. Lovering.
George B. Lothrop.
Richard F. Tobin.
Joseph Collins.
Michael Ginty.
E. F. Young.
Dennis Murphy.
William B. Googins.
N. W. Bunker.
C. W. Ash.
George D. Eaton, jun.
Thomas Montgomery.

George W. Wright.
Joseph Baker.
Thomas Langlan.
Francis M. Mason.
Moses M. Child.
Augustus P. Griffing.
Charles H. Stetson.
Benjamin McIlvaine.
James C. Singleton.
S. C. Redding.
George N. Bramhall.
Abel F. Thurston.
Frank E. Balch.
Josiah C. Smith.
R. O'Connell.
Isaac K. Poole.
John W. Richmond.
Timothy D. Morse.
Appleton Hubbard.
Moses Dudley.
Patrick Corcoran.
William E. Hough.
Henry L. Emerson.
Francis L. Pratt.
William H. McMenimen.
Thomas M. Howard.
E. M. Williams.
Thomas J. Sanders.
Edward N. Coolbroth.
Ambrose H. Clark.
Benjamin D. Willard.
Charles E. Littlefield.
William Foster.
John F. Wilson.
Edward R. Cogswell.
John Horrigan.

Keeper of Lock-ups.

Frederick W. Hagar.

Truant Officers.

Moses M. Child.
John Collier.
Francis M. Mason.

Constables.

Frederick W. Hagar.
William Twist.
John L. Boynton.
John C. Burdakin.
Thomas McIntire.
Frederick A. Lull.
Thomas T. Ferguson.
Timothy Ames.
M. S. Busnach.
W. A. Taylor.
Charles H. Hunnewell.
Charles B. Jones.
Charles J. Adams.
James F. Jefferds.
Charles L. Russell.
James I. Murphy.
George L. Mitchell.
John Lennon.
Thomas J. Stevens.
John R. Fairbairn.
Dennis D. McCarthy.
Mark J. Folsom.
John Good.
Frederick H. Seavey.
Edward R. Cogswell.

SUPERINTENDENT OF BURIAL-GROUND

Ward I.

Benjamin F. Wyeth.

UNDERTAKERS.

Benjamin F. Wyeth.
Roland Litchfield.
Samuel F. Hunt.
Thomas Devens.
John W. Coveney.
Judson Litchfield.
James Kernan.
William Casey.
C. Henry Lockhart.
W. A. Taylor.
James E. Rourke.

AUCTIONEERS.

Humphrey L. Snow.
Samuel F. Rugg.
Thomas T. Ferguson.
C. F. Boynton.
Aaron Farnham.
Edward Burnham.
Enoch H. Wakefield.
Frederick A. Lull.
Alonzo B. Merrill.
Ira Taylor.
Jason Winnett.
Watson G. Cutter.
Daniel A. Buckley.
Edmund E. Sanborn.
John R. Fairbairn.
Samuel C. Knights.
Jeremiah W. Coveney.
John Lennon.
Elias Furbush.
Reuben A. Adams.
Edwin P. Henderson.
John White.
Calvin Ford.
George H. Wells.
Albert O. Delano.
Joseph Heron.
W. A. Munroe.

FENCE-VIEWERS.

George B. Lothrop.
Abiel Goss.
Abel Stevens.

FIELD-DRIVERS.

Thomas D. Cook.
James B. Morse.
Micah W. Cook.
Andrew Sproul.
Andrew G. Smith.
George A. Marston.
Benjamin Kennard.
L. J. Cloyes.
James Miller.
Leonard Shackford.
Daniel Callahan.
William H. Fitzpatrick.
John LeBarron.
Frederic B. Pullen.
Albert D. Cleveland.
Henry M. Tyler.
Alonzo S. Harriman.
Thomas W. Penney.
William Evans, jun.
Hugh McNamee.
Benjamin F. Bridden.
Daniel Sherman.
James H. Parks.
George Wood.
Luther Hapgood.
Simon D. Hiscock.
Rufus S. Downe.
Thomas H. Lucy.
Charles B. Jones.
James E. Murray.
John Little.
Thomas S. Hall.
William Nickelson.
Laurence J. Ducey.
Michael A. Dalton.
James S. Dailey.
James S. Alexander.
William Mullett.
Dennis Corcoran.
Moses W. Hooper.
John F. Murray.
Matthew R. Moore
Amos Jones.
David N. McCleary.
Warren A. Eaton.
Otis Dennison.
John W. Skelley.
George H. Copeland.
William Twist.
Charles A. Brown.
Patrick Doyle.
Charles S. Dixon.
George S. Dudley.
Frank W. Scobey.
William H. Batchelder
William Hawkins.

MEASURERS OF WOOD AND BARK.

John R. Taylor.
William H. Hood.
Herbert T. Lawrence.
Thomas H. Matthews.
Benjamin J. Hoyt.
J. Henry Wyman.
Frederick H. Lewis.
P. T. Clark.

POUND-KEEPERS.

James Gilligan. Thomas D. Cook.
William Twist.

FISH OFFICERS.

Thomas D. Cook. Walter S. Swan.
Andrew Sproul.

HAY-WEIGHERS.

Timothy Sullivan. Nathaniel L. Allen.
William H. Dodge. John F. Brine.
Joshua S. Sanborn.

COAL-WEIGHERS.

James F. Jefferds. J. Henry Wyman.
John F. Brine. Jones Valentine.
Thomas McIntire. Alfred H. Wellington.
William A. Hunnewell. Joshua S. Sanborn.
Thomas H. Matthews. Frederick H. Lewis.
John E. A. Mulliken. Herbert T. Lawrence.

WEIGHER OF BOILERS AND HEAVY MACHINERY.

Joshua S. Sanborn.

SEALER OF WEIGHTS AND MEASURES.

Stephen P. Sharples.

WEIGHERS.

Joseph W. Averill.
Patrick Dunnigan.
James H. Reardon.
Nathan H. Holbrook.
Henry Hooker.
Robert S. Paine.
Thomas Ralph.
George W. Wright.
Alvin M. Haines.
Henry James.
George W. Barnes.
John Reardon, jun.
Joshua S. Sanborn.

INSPECTOR OF MILK.

Stephen P. Sharples.

SURVEYORS OF MECHANICS' WORK.

William S. Barbour.
William A. Mason.
John S. Pollard.
Arthur Hodges.

MEASURER AND SURVEYOR.

E. F. Young.

INSPECTOR OF CHARCOAL BASKETS.

Stephen P. Sharples.

MEASURER OF GRAIN

Stephen P. Sharples.

INSPECTORS OF JUNK-SHOPS.

Frederick W. Hagar.
Amos Jones.
Charles B. Jones.
Mark T. Folsom.

WARD OFFICERS.

Ward I.

Warden.
Joseph Williams.

Clerk.
John Gorman.

Inspectors.
Edmund Miles.
George Allen.
D. J. Hill.

Ward II.

Warden.
Harry B. Winnett.

Clerk.
Charles R. Shaw.

Inspectors.
James H. Davis.
Charles A. Locke.
Frederick W. Holton.

Ward III.

Warden.
Daniel B. Shaughnessey.

Clerk.
Thomas F. Nugent.

Inspectors.
Augustus W. Fix.
John A. Donovan.
Patrick C. Reardon.

Ward IV.

Warden.
E. R. McPherson.

Clerk.
C. H. Montague.

Inspectors.
Joseph Whittemore.
Isaac S. Pear.
William H. Martin.

Ward V.

Warden.
Francis M. Mason.

Clerk.
Charles L. Fuller.

Inspectors.
Cornelius A. Murphy.
Sylvanus G. Griffin.
Joseph Noonan.

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